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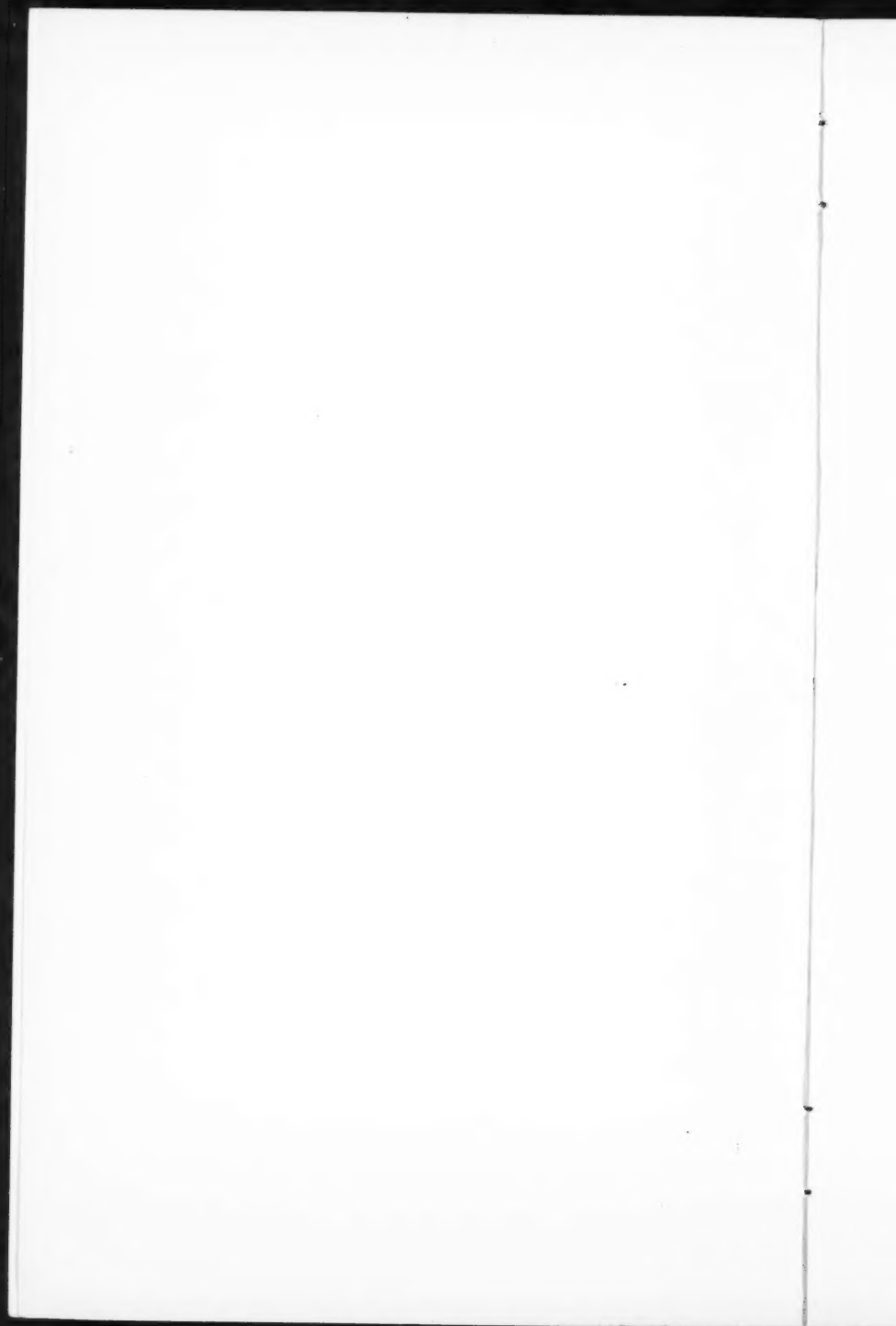


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# Claremont College Reading Conference



TWELFTH YEARBOOK 1947



# CLAREMONT COLLEGE READING CONFERENCE

TWELFTH YEARBOOK 1947

CONFERENCE THEME  
TYPES OF READING MATERIALS  
FOR A FUNCTIONAL PROGRAM OF INSTRUCTION

Sponsored by The Claremont Graduate School  
and  
Alpha Iota Chapter of Pi Lambda Theta

CLAREMONT COLLEGE CURRICULUM LABORATORY  
CLAREMONT, CALIFORNIA

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## PREFACE

William H. Burton, Ph.D.

*Harvard Graduate School of Education*

The student who for the first time dips into one of the annual Yearbooks of the Claremont College Reading Conference, is in for a number of surprises.

Opening one at random we come upon the story of a mother reading the account of her son's holiday at the beach. She reads a tale of scuffling on the beach against which he had been warned, of bathing and failing to take a shower afterwards, of forgetting the sun tan lotion with resultant burn, of a late return and hasty departure the following morning. Does she have a letter from him? Is she taking a sly peek into his diary? Is she reading an account of the week end party in the local newspaper? Oddly enough there is no written or printed material in sight—but the mother is reading an accurate story. She is *reading* the story in the torn shirt and stained slacks hidden in the wardrobe, in the scuffed shoes, in the ripped bathing shorts, in the sand on the rug, in the unopened bottle of sun-tan lotion side by side with a partially used bottle of olive oil, in the uncleaned razor, and the tossed about collars and ties. But is this "reading"? At the Claremont Reading Conference they call it so.

But what is this we see next? "Reading the Rocks," and "Stories in Stones." Rousseau once called reading the "scourge of infancy." The Claremont Conferees evidently regard learning to read as a rocky road. Ah, but here is something surely in a lighter vein, "Through the Hat and Over the Head"! Our hopes no sooner raised are dashed by "A Physician's Approach to Reading." The scourge and the rocky road evidently reduce the child to the place where he needs a physician. Other articles deal with allergies, glands, the education of the eyes. Reference is seen to aural reading, social reading, tactile reading. Primary reading looks familiar but turns out to have nothing to do with the elementary grades. Many articles deal with physiological factors affecting reading. Psychodramatics, juvenile delinquency, alexia, the radar oscilloscope—come let us have done with this nonsense!

But hold! What is this? Why here is an article on developing skills and comprehension. The diagnosis of reading difficulties and remedial instruction. This all sounds more familiar. The reading interests of children and adolescents, supplementary materials, experience charts; this is even more familiar. And here are careful discussions of research bearing upon reading problems, of the difficulties in bi-lingual areas, upon semantics, and finally upon the characteristics of sound programs of reading instruction. The explanation of the wide diversity of materials included in the Claremont Yearbooks is important. The Claremont Conference has consistently defined reading in far wider terms than those commonly used. Reading here means discriminative response to any and all types of stimulus. One may read things, persons, processes, relationships; he may read "sign" as the woodsman

does, or he may read the "signs of the times." (So-called "statesmen" might profit by a course in this type of sign reading.) Written or printed words are one type of sign or symbol which may be read. The latter type of reading is the one the school has been concerned with for generations. The Claremont discussions while giving ample space and attention to the specific problems of reading books, attempt to orient this type of reading within a much larger concept, namely that of interpretation of signs and symbols of all types. The central process in all cases is the achievement or creation of meaning to go with the symbol. Fully understood, the wider understanding of reading enables one to see more clearly some of the specialized problems involved in learning to read words. This is particularly true as we consider the psychological process of achieving meaning. That story, however, cannot be told here.

The Twelfth Yearbook promises to be as stimulating as those which have preceded. A distinguished literary critic opens an article on children's literature with the remark that his little daughter is "happily, still illiterate." The keen and humorous analysis which follows will bring cheer to many rebels in the field of teaching reading in schools. The unorthodox materials are ably represented by an article on reading the earth texts of Southern California, and by one on reading things. Excellent materials are also to be found on many of the factors which influence reading and the reader. One treatment of compulsive reading and its psychiatric significance will repay careful study. A goodly number of presentations are included dealing with the typical school problems, readiness, achievement, handicapped children and their handicaps, audio-visual materials.

Students who do not accept the wider definition of reading which characterizes the Claremont materials will find ample, provocative materials dealing with problems within the orthodox definition. Students who do accept the wider definition will find a number of interesting presentations, the one on reading things by the director of the conference being especially enlightening. All groups of students will find considerable stimulus to thought in examining the unorthodox definition and the great wealth of diverse materials.

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*Millard Sheets*

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## CHINO HILLS

*Millard Sheets*

The Claremont Reading Conference takes recognition of a Claremont citizen and honors an artist of national reputation in presenting this painting of the Chino hills by Millard Sheets. Mr. Sheets directs attention in his pictures to those features which are characteristic of the environment which he is portraying. Because of his insight into the Southern California locale, this picture seems particularly appropriate for a Yearbook devoted to the reading of the objects as well as the symbols of an environment.

Millard Sheets was born in Pomona, California. He has been teaching for the past fifteen years at Scripps College where he was made Director of the Art Department some years ago and is still serving in that capacity. During the War he served as Artist-Correspondent for Life Magazine in the India-Burma Theater for over a year. For this work he received the War Correspondent's Medal of Distinction.

His paintings have been exhibited in museums all over the country, and in current national shows such as the Carnegie Institute, and the Pennsylvania Academy of Fine Arts Annual Watercolor Show. He is especially noted for his use of color in all its significance both as a painter and as a designer. He is now completing four large murals depicting the contributions of the American Negro to our society for the Department of Interior Building in Washington, D. C.

Not only is Mr. Sheets an artist, designer, and teacher, but he is a humanitarian in the true sense of the word. It is especially fitting that his picture should be used as a frontispiece for this Yearbook which is centered on a theme of world understanding.

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## Division I

### Reading the World

*"If I would lead the world, I must know the peoples of the world."*

W. Henry Cooke

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# READING THE WORLD

## Introduction

Some years ago there occurred a division of opinion among those who were interested in the point of view which should govern the teaching of geography. Some held that geography should be taught as a study of the *Earth* as the home of man. Others believed that the emphasis should be placed on *Man* as he worked to establish and maintain a home on the earth. Probably a third group should be mentioned who would advocate both points of view. Certainly both treatments are necessary and the pursuit of either entails much and varied reading.

Dr. Cooke discussing the problems of Reading the World View pertinently states, "If I would lead the world, I must know the peoples of the world." This calls to mind Ann Bryan McCall's statement reported in the previous yearbook, viz., "Human behaviors are of course not haphazard things. They are signs and symbols. They are definite meanings. How well do you read them, or know what this or that human behavior really means, indicates, reveals?"

Not only must we read people but we must of necessity read the attempts of people to communicate one with another. Dr. McClusky briefly discusses the rise of certain language techniques and forecasts a future implemented by aural and visual reading which will make communication more facile and more efficient. He pointedly states, "Reading and listening to the language of others requires discrimination."

The fact that "One World" is more than a book needs to be clearly brought out. In order to have experiences in common people must *read things* alike. The reading process has not been permitted to serve man as it should and can because the process has been restricted in its educational application. Dr. Spencer presents a multisensory description in his treatment of *reading things*. School programs for instruction as well as individual procedures for concept development will profit by utilizing this broad conception of the nature of the reading process.

One's view of the Earth and of the things upon it is limited by the curvature of the Earth's surface, by certain physiological conditions, and by psychological factors. Dr. Atwood, a world leader in the field of geography, tells of "Audio-visual Images that Should Widen Our Horizon." He asserts "the more we know about the people, their environments and the adjustments they have made to that environment and the more we know about their desires and aspirations, the more just and intelligent will our judgments be." To visualize "One World" in a single mental image one needs to widen his horizons considerably.

Reading the Earth texts of Southern California never ceases to be an inspiration for Mr. Bellemin. The sculptors of earth forms make interesting problems for him to solve. The *earth text* has suffered only minor revisions



during human history. Many of man's greatest problems are associated with reading it.

Felix Locher makes map-reading enjoyable and meaningful. Reading the Route from *Here* to *There* is a task which everyone must accomplish. It is fun to think of the route poles, distance poles, rotation poles, and other poles which Mr. Locher contrives to make route reading intelligible.

These aspects of World Reading suggest the magnitude of that process. The Earth as the home of man and man building a home on the Earth are interesting and worthwhile to be read.

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## THE WORLD VIEW

W. Henry Cooke, Ph.D.

*Professor of History, Claremont Graduate School*

"Look at the world and tell me what you see," said the master.

"I see only that which I have been taught to see," said the discerning student.

"I have taught you to see the things that are good for you to learn," said the master.

"How is it then, that my friend of other days who now lives across the great ocean, writes me of circumstances that I do not know? Is it good that I should be ignorant of peoples across the waters?"

"Your friend," said the master, "does you an injustice. It is not well that you should get the notions of foreigners. I teach you the wisdom of your forefathers. It should suffice."

"Is the knowledge of my forefathers the only wisdom? My friend writes of wise men in the land where he lives. He says that all of the people believe in them. I too, would study them."

"I do not know the heresies taught by strange people," said the master, "and it is not good that you should know them. The learning of our people must be kept pure; only thus can we lead the world. You, yourself, will be a leader of the world."

"If I would lead the world, I must know the peoples of the world," said the younger one. "I bid you good day, master."

Thus there grew a revolution in learning because of different ideas of the world. Men have oft times differed on this point, for the concept of the world is a changing one. In fact, the world itself changes from age to age. New relationships exist between cultures and peoples as communication facilities change. This makes it necessary for an ever up-to-date interpretation of one's own position with respect to other people. Along with the folk lore of one's own people there will always be a need of the study of foreign wisdom. There will always be a mild revolution in youth against its elders.

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The Manifest Destiny of the United States to become a world power has been taught in the United States for a century. By this has meant that our people under the guiding hand of God has had a destiny cut out for it that has been inevitable and clearly apparent. Upon this doctrine annexation of territory has been justified by American leaders and great navies have been built. The very spread of the power and influence of the United States in the last half century has tended to bolster the belief in the doctrine of Manifest Destiny. It has supported those who have tried to extend the American way of life as an ideal and to carry abroad the various American interpretations of Christianity.

That America has a form of society that it approves is understandable and laudatory, but it must be recalled that other peoples have similar satisfaction in their social and religious patterns. To believe that one form is the ideal for all peoples everywhere is to evidence a short-sightedness that ill becomes an educated person. To preach the superiority of one's own people or culture abroad is poor manners. What, then, is the ethics of preaching it at home? Everybody's homeland is now a part of an interlocking world.

There is a generally accepted maxim that in religion and in politics one must be a "missionary" in order to advance—nay, to keep alive—religiously and politically. No one will deny this. If one's religion or political beliefs are not adequate for export, they are not good enough to live by. This is as good when applied to a neighbor across the street as it is to a neighboring people across an ocean; but the spirit in which ideas are shared makes all of the difference between building peoples together into one community or into one world and building high walls between them.

That there will always be differences among the peoples of the human race is to be expected. To accept this fact and still to work for the betterment of all is the problem. It involves according respect to strange peoples with ideas that are strange to us; it makes necessary the acceptance of these peoples into our world and learning to get along despite the differences. All peoples will have to join in this effort to educate for mutual respect and all will not do it at the same rate nor in the same manner. If the American people can throw their influence into the project through action and precept, governmentally, religiously, educationally, and in all other ways, a great step will have been taken, for America not only counts tremendously in world affairs but through its very strength it is America that will find it hardest of all to accede to a "leveling" process.

Whether the art of building mutuality in the world and in America be a "leveling" process or not, it is sure to be the way of long term self interest. Power, whether military or cultural, is sure to be resented—it is resented—by those against whom it is exerted. It is not good to corner all of the gold in the world nor all of the self-esteem. Life is a give-and-take process if all are to live, and all must live and will live in some manner. Closeness can breed friction as well as mutual interchange. It is the challenge of our day to see to it that the shrinking social world is an increasingly cooperative one. Herein lies the paradox and the issue. To interpret every aspect of culture in terms of the worldwide need of a cultural understanding calls for a re-orientation in thought for all of us. Loyalty to country and to culture can be taught in this new light if we but find the key to doing it.

This Year Book is an attempt to further this search.

## READING THE TOOLS OF COMMUNICATION

*F. Dean McClusky, Ph.D.  
Lecturer in Visual Education  
University of California - Los Angeles*

It took man thousands of years to perfect language as a method of communication. Nothing is known of the origin of language so all conjectures as to its beginning is impossible of proof. Man is characterized—even the most primitive types of man—by the ability to express himself by means of vocal utterances. This is the exclusive factor which sets man apart from other animals. In a narrow sense, language is the chief reason why man is able to lead a planned social existence. Through thousands of years of social living and planning, groups of men have gradually perfected their speech so that today some of the languages have become highly efficient as a medium of communication.

While nothing is known about the origin of speech—there were no "wire recorders" in use to record the beginnings of language in the pre-stone age—there is some fragmentary knowledge of the origin of writing. There appeared upon the Earth during the latter part of the Old Stone Age a man known as the Cro-Magnon. Anatomical evidence indicates that he was superior to modern man in body and in mind. The Cro-Magnon is credited with having recorded his experiences by means of paintings on the walls of caves. These records, tens of thousands of years old, tell today the stories of his hunting escapades. But for reasons unknown the Cro-Magnon became extinct and it remained for others to make the shift from picture records through hieroglyphic writing to the more efficient alphabet. After man developed an alphabet it took over three thousand years for him to learn how to print.

If man's progress in the development of language were to be plotted on a scale, one inch to one thousand years, printing would be found to have come into use just one-half inch ago. The beginning of the alphabet would be placed at three inches ago and the origin of the cave paintings of the Cro-Magnons would be approximately fifty inches back in time. This visualized perspective shows that it has taken countless generations of man to gradually evolve efficient language communication as we know it today. But even this development from the "One World" point of view has been uneven and spotty. The alphabet languages are taught to the masses only by the people under the influence of "western civilization." In fact there are many languages in use which do not have an alphabet. There is no common world language. Rather there are, according to the French Academy, over 2700 different languages used in the world. In addition, there are many dialects. And within the major languages are many tongues, the technical terminologies of the experts. This multitude of forms of expression makes for confusion and fear—fear that stems from ignorance and misunderstanding. A common language is essential to world understanding.

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printed page has developed rapidly. However, the control of the printed page has been a source of contention between those seeking power. Hitler burned banned books and rigidly controlled the press. Even in America, the production of verbal consumers goods stems from relatively few sources. The chain newspapers and their radio stations, the chain news agencies, and the syndicated "plate" columnists supply most of the words which the masses read and hear. The bulk of the millions of school textbooks which are printed each year in the United States come from the presses of a handful of publishers. And even though the authors and publishers of text-books are scrupulously careful not to "offend," witch hunting in textbooks is not uncommon.

I believe that language first developed from an altruistic urge in man. He wanted truthfully to tell others of his experiences in order that they might profit thereby. But too many men recognized the power of mis-used language and began to employ it to achieve selfish purposes. And so, the unscrupulous have used language to confuse, to disarm, and to lead people into blind alleys. Most people have yet to learn that the language forms of the unscrupulous linguist—whether his utterances be read or heard—are the same in outward appearance and sound as the forms used by those who express themselves in truth. Just because the words sound good or the print looks splendid on high grade bond paper does not make for truth and understanding. Reading and listening to the language of others requires discrimination. One defense is to demand plain understandable language when we don't understand. And if the other fellow can't make his point clear, then we should be skeptical. We must not be afraid to ask questions for fear of appearing to be dumb. To fail to ask questions when we don't get the meaning from the printed page or from speech is dumb. Perhaps it would help if we formed the habit of saying—as Andy, of radio fame, says when the Kingfish tries to put one over, "Kingfish, that whizzed by me." It would be interesting to note the effect on teachers who give long reading assignments beyond the pupil's comprehension if every child in class would insist on an explanation of each word or phrase not understood. Would it put an end to verbalism? I doubt it. But it would be a healthy shock to some.

In America we point with pride to our great system of public education. As an institution it is perhaps the most significant contribution that American democracy has made to man's progress. Along with the rapid spread of education in the last hundred years there has been an acceleration of invention and improvements in living standards never duplicated before in the history of man. This last tenth of an inch on our time line has seen man develop the railroad, the steamship, the automobile, the telephone, the telegraph, the airplane, the motion picture, the radio, and a multitude of labor and time saving machines. The resulting efficiency with which we can travel and communicate with each other over long distances has made the dissemination of knowledge to the masses possible. In fact our technical ability to manufacture the materials for teaching has outstripped our ability to train teachers fast enough to meet the needs of the great masses of students that have flocked into the educational institutions in this country. If it had not been that we have been able to manufacture millions of text-books each year our public school system would have collapsed for want of



materials to keep the children busy. While the flood of books to read has been a blessing to the harried teacher, it has also been a handicap to sound education. A book to be read is one thing but to read it with understanding and comprehension is another. The point is that the human organism is not a machine that can be speeded up by adding a few well oiled gears. A printing press can grind out in a few days enough reading material to keep a child "busy" for months. In our efforts to keep pace with the printing press we have crowded the hopper with the result that children and adults are confused by the bulk of the reading material which is presented to them. Biologically we do not "learn" any faster today than we did one-half inch ago on our time line. Whatever acceleration there is in learning is an increased tempo of reactions to an accelerated flow of stimuli. And therein lies the danger, because an accelerated tempo of reacting reaches an end point beyond which the organism cannot go.

To illustrate our point let us consider the matter of silent versus oral reading. Overemphasis on silent reading has made oral reading almost a lost art—to the detriment of the pupils who have been taught to sacrifice accuracy and clear thinking to speed. The emphasis upon silent reading began in the early days of the measurement movement. At that time also a hue and cry was raised for economy of time. The speed with which pupils could write, cipher, spell and read was measured for the purpose of devising ways and means to increase the tempo of pupil performance. In the case of reading it was assumed that, if children could be taught to read faster and with greater comprehension, it would save time for other activities that were being introduced into the curriculum under the cloak of enrichment. The measurement boys discovered further that pupils could read faster silently than they could orally—a perfectly obvious fact; but since speed was deemed to be essential, oral reading was put on the spot. In fact, it with its slower ways was politely placed in solitary confinement. With the way thus cleared, many devices were invented for the purpose of drilling pupils to speed up eye movements. And in order to give the fast-moving eyes something to move over, reading assignments became longer. Text-books doubled and trebled in size. Words flowed into the hopper like a veritable Niagara. Then the danger signals began to show. Increasingly large numbers of children in elementary schools were found to have developed optical defects. On up the line, secondary schools and colleges began to report that students were becoming superficial, that they did not think clearly; in short, they did not know how to read analytically. Later the psychologists and psychiatrists began to protest as they watched the mounting number of nervous systems that had cracked under the strain.

The eye muscles that are involved in reading are perhaps the most delicate mechanisms in the entire human body, and in the growing child can be easily abused, particularly if the total muscular system is not given an opportunity for well-balanced development. Oral reading differs from silent reading in that the muscles of speech and of bodily expression come into use. This has value in not producing a continuous concentrated nervous strain on the delicate muscles of the eyes. Oral reading has the added virtue of training children to express themselves in speech. And since each word must be pronounced clearly and expressively there is more opportunity for contemplation and less necessity for superficial skimming and slurring over words

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that one thinks he knows only to find later that he doesn't know. One of the main functions of a teacher is not to put pupils on an Indianapolis speedway in order that they may cover yards of printed lines but rather to select carefully those passages of print that are worthy of being understood and contemplated. It would appear that less emphasis on speed and more emphasis upon the development of a good balance between oral and silent reading habits is to be desired.

A third way in which we can defend ourselves against verbalism is to use more of visual-sensory education. When man invented the photograph, particularly the motion picture, he contrived a basic method of communication, second in importance only to language. Teaching pupils to read pictures and objects with meaning is as important as teaching them to read the printed page. Furthermore, studying pictures and objects does not place a strain on the eyes comparable to studying print. The systematic use of large or projected pictures in classrooms provides a relief from excessive eye strain caused by long periods of close-up reading. In addition, if the pictures and objects are related to the language forms of communication they make the language more comprehensive and easier to digest. While pictures can be faked and used to propagandize, it is more difficult to fool people with pictures than with words. In the classroom, pictures and objects give the students something in common to talk and to write about with understanding.

Already the motion picture is the mass method of communication. More people in America see motion pictures each week than those who read the newspapers. From the "One World" point of view, the motion picture is the universal medium of communication. It cuts across language barriers as can nothing else. The motion picture is a powerful incentive to changes in behavior, manners, morals and customs of people. This important new tool of communication must be harnessed to the work of teachers quickly if we are to achieve our educational goals in the post war world. Verbalistic methods alone are too uncertain. And in no field of endeavor are the dangers of verbalism greater than in education. As one looks back on man's struggle to perfect language as a tool for communication, one wonders how long it will take to combine pictures and language into the perfect tool which will bring a common basis for understanding to all the peoples of the world.

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## READING THINGS

*Peter L. Spencer, Ph.D*

*Professor of Education, Claremont Graduate School*

This pebble is older than Adam.

Secrets it hath to tell.

The rocks, they cry out history

To those who read them well.

This verse suggests an important but often disregarded phase of reading behavior. The rocks, soils, streams, trees, birds, flowers, fruit,

animals, people, and all other things of regard to man must be read by him in order that behavior may properly be adapted with regard for them. A "total reading program" is, therefore, a very complex and inclusive thing.

Fortunately, the basic equipment and fundamental processes for accomplishing reading are inborn. They need only to be developed, refined, and directed through learning. If the reading process were actually lacking, as some of our terminology appears to suggest, until the process is initiated in schools, our lives would be very unstimulating and precarious. Whenever behavior is adapted, we read.

Reading is the process of making discriminative responses. Fitting one's behavior with stimulus situations one perceives is a fundamental process of life. It is as characteristic of cell development as it is characteristic of decisions of the Supreme Court, of compliance with official directives, or other similar acts of understanding and judgment. All people read, but not all people read the same things with comparable facility or comprehension. Instruction in reading does not actually initiate the process. Instruction in reading is commonly concerned merely with activating and facilitating the reading of certain things. Hence it is evident that instruction in reading may go on indefinitely or until one achieves that happy state in which one reads all things with great skill and ease. In that ideal condition one's behavior would be functionally and properly adapted with regard for all circumstances and one would then be *wholly literate*. Obviously, no one can possibly achieve such a state of total competency. There are so many things to be read, and they must be read so many different ways that we must select the things we shall endeavor to learn to read well. But life will be more stimulating and fruitful if we do not choose too narrowly the things we propose to read.

Among a group of teachers enrolled in a course devoted to the study of reading were two Smith-Hughes agricultural teachers. When the members chose their special problems for study, these teachers chose to study the problem of the "farmers' reading." Each teacher went about his investigation in his own way. Each developed his own concept of what constitutes the farmers' reading problems.

When the reports were presented for consideration by the group, the first agricultural teacher told how he had drafted a questionnaire with which he surveyed all the farm homes in his district. He reported the number of books, magazines, newspapers, bulletins, etc., that were found in the homes. He reported the amount of reading done with such materials during the previous month. He was surprised and somewhat humiliated to find that few of his people had many books, magazines, etc., available in their homes. Very few had read the bulletins which college and the government agencies distributed regularly. He seemed quite discouraged and hopeless about it all and offered the conclusion that farm people do very little reading. The report reminded one of the story of the farmer who was asked to join an extension class to study better farming methods. He replied, "I can't see any reason for joinin' such a class. I already know how to farm a darned sight better than I'm farming right now."

The second agricultural teacher also surveyed his district. But he had a very different set of problems in mind. The day he reported to the group he came to the class with a large bundle of branches taken from fruit trees.

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He began his discussion by asking the members of the class to *read* the objects he had brought for their consideration. He pointed out that many of his farmer associates raised deciduous fruits and that the harvests they secured often depends very much on the farmer's ability to *read* the trees, or things which might affect the welfare of the trees. For example, he displayed a twig which was badly infested with a scale. He pointed out that "illiteracy" or failure to read that situation adequately could mean the loss of the crop and possibly even the loss of the tree.

Another branch was used to disclose the difference between leaf buds and blossom buds. The relative development of each is a matter of no small importance to the farmer. Then too, there is a proper time to spray for various pests. This must be read from the growth of the buds or the fruit. He discussed the problems of pruning, spraying, fertilizing, thinning, harvesting, grading, packing, and marketing all as reading problems. He took up other types of farming and similarly treated reading in those areas. The poultry raiser has his reading problems. The stock raiser likewise. The general farmer has the whole gamut to read.

When this report was concluded, everyone was convinced that farmers do a very great deal of reading even though they may not have many books in their "libraries." They are so busy reading the things of immediate and pressing concern that they often have little time for or interest in the reading of printed words.

In this class group there was also a teacher of home economics. She entered with an apologetic statement that she realized that in her work very little reading is required but that she was in need of some salary increment credit and the course in reading was the only available source of such credit. You will sense right away that the teacher was more honest than tactful. She did agree to study her field to discover what reading tasks actually are performed therein.

Of course, she turned to the cook-book, to books of directions concerning various household machines, and to textbooks on home management. She was surprised and shocked into more strenuous, insightful study when the remark was made that one must read all things. Love letters are more often written with pies and bread than with pen and ink. The penalty for illiteracy in this regard may be a "broken home."

Her report brought out many types of reading activities having to do with choosing textiles, planning, making, fitting and wearing clothes. Problems in adapting menus to fit family needs, appetites, and with proper regard for economies and nutrition are evident. The relationships among family members must be read with judgment and care. So must the planning and operation of the home. The problem of guests requires careful reading, etc. She concluded that home making is a reading activity "than which there is none than whither," as the saying goes.

The home maker must read many things and communicate by means of many media. It wasn't by mere chance that the pictorial language of China symbolizes the greatest good by means of a composite of the symbols for woman, male child, broom, and pig all under the symbol for roof. An industrious mother making a home under a roof and raising something to use as food is *good* in any language.

Reading a cook book is scarcely adequate to allay a hunger. The printed

instruction "season to taste" merely inaugurates a gustatory reading task. Home cooking isn't preferred merely because it is done in the home. It is distinct because the reading which produced it has been better adapted for the reader who consumes it. Regard for one's reader will be shown by the way that which you wish him to read is arranged. An excess of salt in food designed for one who does not care for salt is surely in "bad taste." A "suggestion of garlic" becomes offensive when the suggestion is made too obvious.

Food reading is not all gustatory and olfactory. Dr. G. Stanley Hall once told of conducting an experiment in a boarding house dining room. The guests were told that an experiment was proposed, but they were not informed as to its nature. However, they agreed to cooperate to the best of their abilities.

The quality and amount of food was kept as nearly constant as is practicable. But the table service was made to deteriorate until the condition became positively repulsive. Appetites failed. Guests became irritable and petulant. The entire social atmosphere of the dining room became altered toward the worse. Gradually the service was remediated. Along with that process the social atmosphere improved. Since the quality of the food had not materially changed, the inference is that other reading as well as gustatory reading is accomplished as one eats. We read the way food is served and such reading reflects in social attitudes and behavior.

We have an adage to the effect that "clothes do not make the man." Some wag has commented on this to point out that "clothes may not make the man, but they have a lot to do with the way he appears." Apparently, then, we must read clothes. Stories they have to tell. Let's hope that we read them well.

Not long ago a school principal was assisting with a program of personal interviews. At the close of the period for interviews the committee was brought together to confer about the applicants. When the name of one of those interviewed was mentioned the schoolman said, "Oh! I remember him. He's the young fellow whose pants are so baggy they make you think he is going to jump." That young man might well join Robert Burns in his famous wish, "Oh! That some power had the gift to give us to see ourselves as others see us." But of course, the baggy pants only gave the impression that the young man was going to jump. Actually, jumping or any other form of rapid movement was somewhat out of his line. So there are hazards in this sort of reading. One is reminded of the line in a once popular song, "'You don't know Nellie like I do,' said the saucy little bird on Nellie's hat."

A Canadian Northwest Mounted Policeman appeared as a guest speaker before a college assembly. He told of a custom among the Eskimo tailors which amused and interested his audience greatly. It seems that the tailors will not make clothes for persons whom they do not know sufficiently well so that the clothes can be designed properly to suit the tailor's estimate of the person's personality and character. Clothes, in Eskimo land, are likely to sell some interesting sidelights on the wearer. Imagine going about with clothes which your tailor has designed to show that he thinks you are "a boy about town."

But similar customs prevail in many lands. Among certain Indian tribes

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tattoo marks are made on the face of a woman when she enters marriage. Woe to the illiterate who fails to read such writing!

Our society has many techniques for expression via the clothes we wear. Perhaps the most elaborate and systematized are the uniforms and insignia of the armed forces. In this regard we far outdo the Eskimo tailors, because the tales told by service uniforms, when properly read, give authentic data concerning the wearer's branch of the service, his rank, the length of service, campaigns in which he participated, whether or not wounds were suffered, etc., etc. Not long since, reading uniforms was a prominent and important part of our social reading activities.

We read with any and with all of our senses. Oftentimes some special technique is developed to aid or refine a particular task of reading. Sometimes instruments are devised to make possible more accurate reading when situations so require. For example, we all read the temperatures of the air about us. These are interpretations of stimuli from temperature receptors which are widely distributed over our bodies, i. e., they are among the "common senses." From such data we judge that the weather is warm, cool, cold, or hot. But mothers preparing to serve food to very young children must use more care in reading the temperature of that food. Various techniques have been conceived. Some "taste" the food, i. e., they take a sample in their mouths in order to read its temperature effect. Others place a sampling on the palm-side of their wrists. The skin is not "toughened" there and the blood vessels and temperature receptors are easily affected. When more exact reading is required, a thermometer is inserted in the matter of regard and the temperature is then read indirectly by means of the changes registered by the instrument.

Perhaps the most important reading that we do is reading our own responses to situations that we perceive. This has been called "the kinesthetic backkick," because it completes the arc from stimulus to response back to the stimulus. It really is a form of reading in which the things we do and the ways in which we do them become the stimuli. Receptors for this reading are found in the muscles, joints, and tendons. Reading such stimuli may be termed kinesthetic reading.

The story is told of a young man who was quite proud of his muscular strength. He liked to throw stones and he particularly liked to throw large rocks into bodies of water. The resulting sounds and splashes fascinated him. One time he was with a party of other young people approaching Crater Lake. This lake, as the name implies, has been formed in the crater of an extinct volcano. Much of the rock found there is pumice stone. Pumice stone looks very much like other stone but it is very light and readily floats on water.

The muscular young man saw a large stone conveniently situated near the bank of a river. He rushed to the stone, braced himself to give adequate power to lift it, and quickly heaved the stone at the river. Imagine his discomfiture when the stone proved to be much lighter than he anticipated, making his movements very awkward, but worst of all—the stone floated away with practically no splash! The astonished young man turned to his companions and said, "*A ton of that stuff wouldn't weigh a hundred pounds!*"

Since we learn through doing, kinesthetic reading is a counterpart of

the reading of every other sensory stimuli. Kinesthetic reading is largely responsible for the meanings which we create for the stimuli we sense. The development of facile, accurate, and pertinent kinesthetic reading is a must in any program for reading development.

Reading is the process of making discriminative reactions. It is not merely a process which is used with printed word material. But it is a fundamental mode of behavior which we use with any and all sensory data. Consequently, as identified by the sense which appears to characterize the process, we may have visual reading, aural reading, olfactory reading, gustatory reading, tactual reading, thermal reading, kinesthetic reading, etc., etc. Similarly, as identified by the functions the process performs, we may have social reading, i. e., reading other people, their customs and institutions; personal reading, i. e., reading oneself; lingual reading, i. e., reading communication of various forms; and "thing" reading, i. e., reading animals, plants, the Earth, the heavens, and all the multiplicity of things which affect our lives. The development of abilities to read effectively those things which are of greatest significance to us, individually and collectively, constitutes the very essence of education. Hence, *all teaching is instruction in reading*. And all teachers who teach anything at all teach reading, i. e., they teach pupils to respond more effectively with regard for certain matters of concern. A functional coordination of all teaching effort and all learning toward the production of more facility with making pertinent adaptation in behavior is an evident need at the present time.

This discussion has made little mention of books or other forms of printed material. The emphasis has been directed toward the basic nature of the reading process and toward illustrating by examples many types of reading activities. The common conception that reading is "what one does with books" is psychologically and educationally too narrow to produce a good reading instruction program. There is need of a broad conception upon which to base a program which will prove pertinent and effective in every aspect of living. Certainly there is need for "discriminative behavior" which is motivated and directed by high social consciousness. Reading is that process of making discriminative reactions. There are no non-readers but there are multitudes of readers who read poorly and with too little facility, certain things which our way of life holds in high regard.

## AUDIO-VISUAL IMAGES THAT SHOULD WIDEN OUR HORIZONS

Wallace W. Atwood, Ph.D., President Emeritus  
Clark University

We hear a great deal now-a-days of the need of a better understanding of world problems. More and more citizens who hold positions of leadership are emphasizing the necessity of the United States of America taking a large responsibility in the conduct of international affairs.

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One of the all-important problems is: How shall the peoples in the different national groups come to have a better understanding of each other? No one can sympathize intelligently with people living on a distant part of this planet unless he knows something of the cultural background of these people, has a mental picture of the landscape in their country, appreciates the possibilities and limitations placed upon the people by the climate in their part of the world and knows of the natural resources available which may help them make a living.

All people have essentially the same instincts and desires but they have invented different ways of doing things and different ways of living. Tolerance and understanding between people who have quite different customs can come only when there is adequate knowledge of the reasons for their differences. Each national group must come to recognize the contributions which the other groups are making and they must all appreciate the interdependence of the various peoples in the world.

This should lead all of us to recognize that the greatest problem facing the peoples of today can be solved only by education. No time should be lost. We should adopt plans for speeding up the processes of education. In certain fields of study we should adopt that most wonderful aid to education that has ever been invented, the sound moving picture. With this device we blend visual and auditory images and for concepts involving motion these pictures are far more effective than a textbook or the spoken word. With views taken from all parts of the world depicting the home life and occupations of the different peoples we should broaden the horizon of our young people and prepare them to take their part as this nation, unavoidably, assumes the leading responsibility in international affairs.

A fundamental part of that education has now been organized in a course of World Geography so arranged that it will serve as an introduction to world understanding. This course is in the field of human geography and it is to be accompanied by a series of colored motion pictures with a recording of natural sounds from all parts of the world. Audio-visual images will be blended as they are when we attend a drama or an opera.

The more we know about the people, their environment and the adjustments they have made to that environment and the more we know about their desires and aspirations, the more just and intelligent will our judgments be.

As little children we have all studied the simpler elements in the geography of the several countries. But we have postponed too long the development of courses in geography for the high schools and for grown ups. These courses should have a world point of view. They should be free from any narrow nationalism. No one would think of teaching a different physics, chemistry or mathematics to the people of different nations. Why should there not be developed a course in world geography that is distinctly objective and scientifically accurate, so that it will be just as appropriate for the people of China, Russia, Brazil or the United States of America? Such a course could be put into several languages and fit into a plan for international cooperation in education.

World geography, a great out-of-door study, is so photogenic that it is an ideal field in which to use that most powerful of modern educational aids, the sound moving picture. The pictures we desire should be taken in natural

colors and the local or native sounds that will help in presenting important concepts should be recorded. Sound tracks of the films can all carry much supplementary material which will enrich the treatment found in an accompanying textbook.

This course was laid out as a research project at Clark University subsidized by the motion picture industry. Between 30 and 40 experts in geography and education have contributed to the various revisional changes that have been made.

The seventh revision of the outline has been approved by the "National Commission on Educational Moving Pictures" which was set up by the American Council on Education and generously subsidized by the moving picture industry of America. The National Commission by a special grant has made it possible for me to secure the services of a professional scenario writer and after two years of work we have produced plans for 50, two-reel films.

Each film will take about twenty-two minutes to run, thus leaving time for discussion of the topic or lesson during a regular class period. With fifty films available there will be one for each week and enough so that two can be used during a few weeks of a normal school year. The course will be amply illustrated but not overloaded with pictures. The films should bring into the class room vivid dynamic action pictures in natural colors from all parts of the world. Educational work will be greatly simplified and all concepts involving motion will be made much clearer than is possible with words alone.

Few subjects lend themselves so naturally and favorably to photography as those that deal with the great out-of-doors and with the people at work. In those scenes there is action. Thus, in depicting the story of "Our Daily Bread" the production of wheat and the manufacturing of bread is distinctly dramatic and full of action. For a much larger fraction of the people the daily bread comes from rice, and that immediately suggests another sequence for the camera. In the tropics the native people depend upon the cassaba root which they grind up and use as flour. Among many people corn provides the daily bread. Every step from the planting of the kernel to the baking of a tortilla is dramatic.

The work of the weavers of today in the different countries of the world reflects all of the methods from those that are most ancient and primitive to those most modern and mechanical. There are thousands of people today who wear clothes made of the simplest of home-spun material. Some spin their wool today while herding sheep. Many humble people weave for hours in their homes after a day's work in the fields. Millions of people on this earth have never yet had machine-made cloth with which to make their clothes.

The humble negro of central Africa still hammers out little iron knives for use in preparing food, and metal bells which he hangs about the necks of humped cattle or fleecless sheep. His is the work of a blacksmith. The smithy is still at work in some parts of the world, while in a few countries men are working with trip hammers weighing two or three tons, operated by steam or electric power. They are all hammering heated metal into useful forms. The work of the blacksmiths throughout the world of today is a richly dramatic picture.

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How differently people travel in different regions! The passenger wheelbarrow and the sedan chairs have not yet passed out of use. There are camels, yaks, and elephants in use. In many lands there are those who have not seen an automobile or an airplane. The contribution which the wheel has made to civilization is full of motion. All means of transportation provide excellent opportunities for motion photography.

The story of trans-humance, told a few years ago in the wonderful film "Grass," should be told again and again for it is the very essence of life for thousands of people in Switzerland, for hundreds of people in Greece, for many, many hordes in Iran and Iraq, for primitive tribes of southwestern China, and for other thousands who live in semi-arid regions near mountainous areas.

In the western lands of the United States trans-humance is well established. Hundreds of thousands of sheep are pastured during the summer months in the high alpine gardens of our western mountains and taken to the lower lands to feed in grassy meadows during the winter seasons. This story is repeated in virtually every continent, and it is a story that moving pictures can tell far better than words.

The films should make it possible to present in a one-year course 4 or 5 times as much as is included in a textbook. The effectiveness in the presentation of concepts of different peoples in various parts of the world, speaking different languages, doing different kinds of work and building different kinds of homes, will be so great that this course should mark the opening of a new era in the teaching of geography. It should, by blending audiovisual images based upon camera work in all parts of the earth, serve as an effective introduction to world understanding.

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## READING THE EARTH TEXTS OF SOUTHERN CALIFORNIA

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To appreciate fully one's environment it is necessary to know many things about it. By "to know" is meant to understand the many phases of natural and human history which contribute to produce that which we see. It is rather easy to feel that we adequately know an area when in reality we know only one aspect, such as the plant life or the human history. However, they are only a part of the whole story. Of all the various things that contribute to make an area, geology may be regarded as basic.

The geography of an area often controls the human history, plant, and animal life there. How a particular type of geography is created is geology.

Therefore, since a good starting point for most subjects is the basic fundamentals, geology would certainly be one of those fundamentals.

It is not proposed that every student be given a course in geology. However, an occasional reference to some geological aspects of an area might clear up "reasons" and "causes" for things as they are now. Also, a little geological knowledge might increase the enjoyment of a trip through the National Parks or a walk in our mountains.

In considering anything from the geological aspect we must gain a new concept of time. Time, from our point of view, is largely based on our own life span. Anything older than our life span, or existing for over 100 years, is considered old. The geologist thinks of time in terms of the life span of the earth. To the best of our knowledge, the earth is a little over two billion years old. This makes the Grand Canyon, Yosemite Valley, or Mt. Etna all very young. Mt. Etna, judging from the amount of lava present today, and the frequency of eruptions, is about three hundred thousand years old. Yosemite Valley is largely a product of the glaciers of the Ice Age. The Ice Age started about one million years ago, and occurred as a series of four cycles of ice with warmer periods between cycles. The last cycle started about one hundred twenty-five thousand years ago and lasted approximately one hundred thousands years. That would make Yosemite Valley about twenty-five thousand years old. The cutting of the Grand Canyon probably required about a million years. Geologically it is regarded as a very young canyon. From this point of view we can approach geology and the units which make up the crust of the earth.

The surface of the earth and the shallow subsurface together are known as the crust. In and on this crust new rocks are constantly being formed. The newest is the hot lava pouring out of a volcano somewhere on the earth at this moment, or the sands and mud being deposited by the Colorado River, the Mississippi River, or other rivers. The ice masses in the north are depositing material. The desert winds are carrying dust and depositing it somewhere today. So, the rocks on the earth's surface can be of any age from a few minutes to two billion years old. However, in view of the fact that geological agents act so slowly in such a great time span, it is safe to assume that any landscape you see is quite old, from the human history point of view, and the units (rocks) which form that landscape are possibly very old from any point of view.

The agents active in forming the earth's crust act both constructively and destructively. The principal agents acting in and on the crust are the atmosphere, water, ice, wind, vulcanism, plutonism, diastrophism, and metamorphism. These are not of equal rank in classification but each can be considered separately, though their actions may not always be separated, such as in the case of the atmosphere which combines with water as an active agent of chemical weathering.

All these agents are actively building and destroying the earth's crust at this moment, but some are active so far beneath the earth's surface that the work they do is never seen until it is brought to the surface during some great upheaval. Some agents are acting around us here in southern California daily.

Since a discussion of all these agents and their inter-relation would necessarily become somewhat technical, only those whose effect is clearly

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visible to anyone in southern California will be discussed. These are water, wind, and earthquakes.

Water is probably the most important agent acting on the earth. It has been active since the earth cooled. Its importance is in part due (aside from its physical properties) to the fact that it is found everywhere and that it builds almost as much as it destroys.

Water action is applied in many ways in its cycle from the ocean to the sky as water vapour, down to earth as rain, and back to the ocean in streams and rivers. During this cycle it usually removes material from one area, later depositing it a few feet or a hundred miles from its source. Each type of water erosion and deposition produces a distinct type of sediment. The many factors involved in the formation of a sediment leaves their characteristic marks, thereby enabling the geologist to reconstruct the history and origin of the deposit.

By tramping in the washes in southern California some of the rules of deposition may be observed. The larger blocks are near the canyon mouths, and the farther downstream you go, the finer the material is (Fig. 1). The harder rocks will last longer and be in larger pieces than the softer ones. These points are characteristic of most water deposits. The farther material

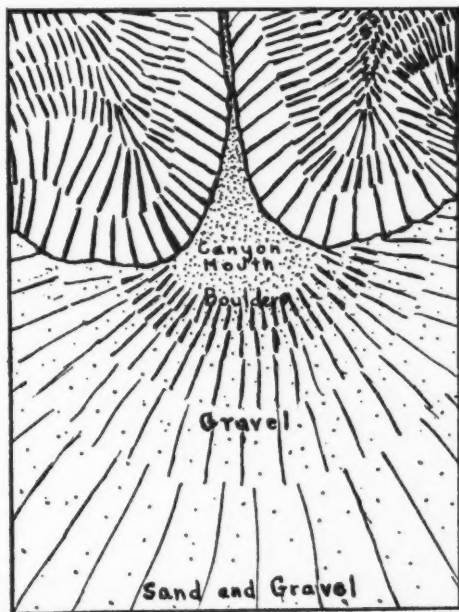


Fig. 1. Diagrammatic sketch of a canyon mouth and fan, showing the areal distribution of detritus in a typical fan.

is carried from its source, the finer it will become, and as it becomes finer, the water can transport it a greater distance. A gravel is then deposited nearer its source than a sand, and the same relation applies to a sand and mud. The same principles apply to ocean deposits. If all these materials were carried to the ocean by a river, the coarsest material would be deposited nearest shore and the finest would travel several miles off-shore. In southern California we have many hills of sediments, the San Jose Hills, Puente Hills, Baldwin Hills, Signal Hill, etc. Some of the clues to their past are the simple points just described.

It was mentioned that each manner of deposition produces a distinct deposit. A good example of this is material in the washes of California. While this material is sorted, the sorting is poor. Sometimes large boulders are found mixed in with the small gravel. This is due to the bursts of water which come roaring down these washes, picking up everything at once and dropping it almost as suddenly. A more continuous, less violent action would sort the material more carefully. The canyons in southern California have conically shaped mounds at the mouth of each canyon. These are called fans (Fig 1). The material in those fans is called fanglomerate. A fanglomerate is the typical distinctive deposit at the mouth of a canyon in a semi-arid climate.

The action of the wind is very evident in southern California, particularly in the desert. During a wind storm particles of rocks are picked up and carried many miles. These small fragments act as cutting tools of the wind and over a period of time will "sand blast" surfaces to a high polish. Facets and flutings are found on desert rocks. The more important part of this action is the movement of the wind-borne material to a new area. Hundreds of tons of material are moved in this way, and in many places perceptibly lower the desert floor.

While the wind's sweep is greatest in the desert, it sometimes is objectionably strong in the San Bernardino-Pomona Valley area. Until recently, when the wind-breaks, vineyards, and orchards reduced the wind's strength (and thereby its carrying power), it was not unusual for traffic to be stopped on the Foothill and Valley Boulevards by the sand in the air. The action of the wind moving great sand dunes at the Sahara Desert can be observed doing the same thing on a smaller scale in the Fontana region on a windy day. In the region to the west and north of Yuma, Arizona, there is a belt of sand dunes which rival those of the great deserts of the world.

The most spectacular of the geological agents in California is the earthquake. This is only a minor surface manifestation of an action known as diastrophism. As adjustments are made within the earth's crust they sometimes extend to the surface, causing a fissure along which there is movement. These movements are earthquakes, and the fissures along which the movement takes place are known as faults. The whole earth is constantly quivering from these adjustments, most of which are so slight that they are not noticed. Unless these blocks along the fault move appreciably, there is no evidence of the damage done to the crust at the surface, but when there is a horizontal or vertical displacement, crushed zones of material may be seen. These zones may be from a fraction of an inch to several miles wide, with multiple faults. The topography of southern California is influenced by some major faults. Small vertical displacements of recent movement can

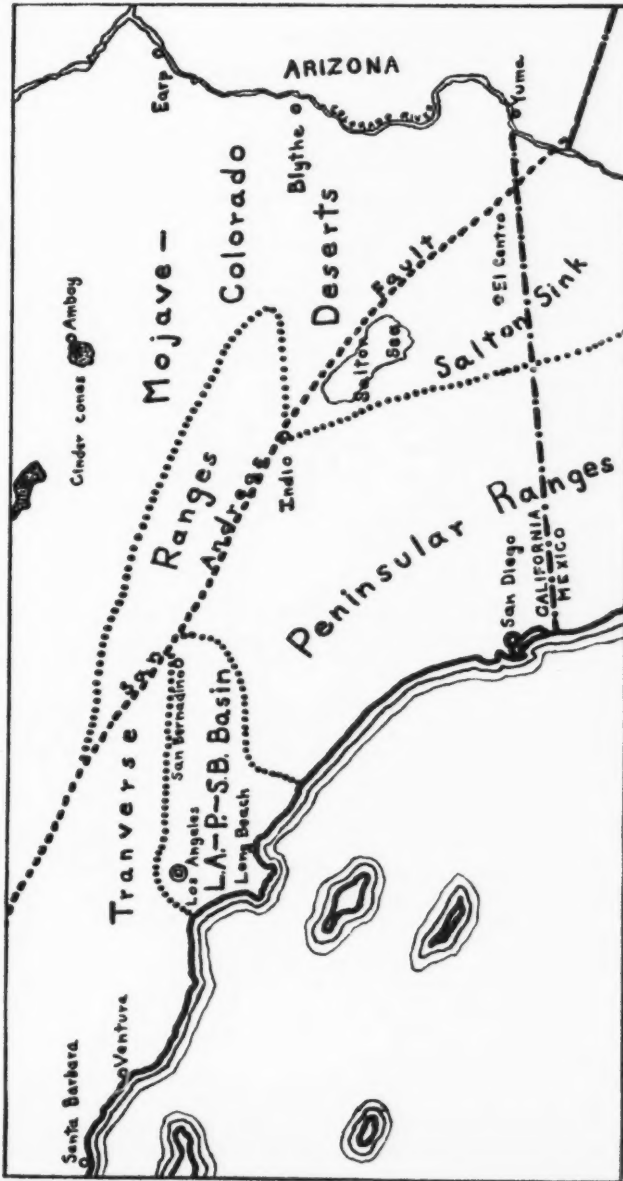


Fig. 2. Sketch map of southern California showing the major geological provinces and the San Andreas Fault.

be seen cutting the fans north of Foothill Boulevard, between Ontario and San Bernardino.

The geographical units of southern California can be distinguished on several bases, depending on the point of view. By using a broad geological basis the area can be divided into five major units: the Transverse Ranges, Los Angeles-Pomona-San Bernardino Basin, Peninsular Ranges, Mojave-Colorado Desert, and the Salton Sink, (Fig. 2). Though these divisions are based on roughly similar topographic features and related geology, they also approximate some subdivisions made on different bases, such as the plant life, animal life, and even some native ethnographic groups. In addition, some climatic differences are notable in the various blocks.

South of the San Gabriel Mts. we have the Los Angeles-Pomona-San Bernardino Basin which is the zone of greatest population in southern California. It is a series of alluvial basins between the mountains and the sea. Through this flat, southward sloping alluvium project a series of low, rounded hills of folded and faulted sediments. These hills have yielded a great deal of oil. Further work is constantly being done to maintain and increase production.

The Transverse Ranges are really several separate units. They have an east-west trend which is at variance with the general northwest-southeast structural trend of California. The three main blocks north of the Los Angeles-San Bernardino area are from west to east: the Santa Monica Mts., the San Gabriel Mts., and the San Bernardino Mts. The latter two units are very similar geologically and are separated by Cajon Canyon. Each of these two blocks rises over 10,000 feet, with many peaks over the 7,000 foot level. These mountains are very complex in structure and inadequately known. In general, this range consists of fault blocks of old igneous and metamorphic rocks. The whole mass is complexly faulted and injected with younger igneous material.

The Peninsular Ranges extend southward from the Los Angeles Basin following the general structural trend of California. It is also a group of mountains, including the Santa Ana Mts., San Jacinto Mts., Laguna Mts., etc. and on into Mexico and the length of the peninsula of Lower California. This range is largely a composite group of igneous masses with a few zones of metamorphics. The igneous masses differ in composition, producing a difference in surface outcrop appearance and types of vegetal covering. Some major faults parallel to the general trend complicate the structure.

Immediately east of the Peninsular Ranges there is a triangular basin with its apex near Indio and the base at the head of the Gulf of California. This area, sometimes known as the Salton Sink, is at sea level or lower. The north central section is the lowest and contains the Salton Sea. This is a down dropped block bordered with some sedimentary rock on both sides. The level of this salt lake varies due to evaporation and the overflow from the irrigation canals in the valley. The level has fluctuated around 240 feet below sea level for a number of years.

East of all these units discussed is the Mojave-Colorado Desert. The northern section of this area is known as the Mojave Desert and the southern part is the Colorado Desert. The exact boundary between these two desert basins is not well defined. Various authorities have given different definitions of these two areas. In many ways they are very similar and will be

considered as one block. This desert area is true desert, in general averaging less than 10 inches of rain a year and in some places it doesn't rain every year. The northern section averages approximately 2,000 feet above sea level while in the south it is a little lower. The structure of this area is a basin and range structure which extends into Nevada and Arizona. It is broken up into a series of small blocks; the upfaulted blocks form the ranges and the downfaulted ones the basins. These basins are filled with alluvium from the ranges which project through their own debris to form jagged, elevated ridges between the basins. Most of the ranges are quite old sedimentary, metamorphic, and igneous masses. In the western section younger material is found. Volcanic materials of recent origin cap many of the ridges and two almost perfect cinder cones are still standing in the center of the Mojave Desert, (see Fig. 2).

One of the most spectacular features of southern California is the great slash across the topography made by the San Andreas Fault, (see Fig. 2). California is cut by numerous major faults, but this is one of the best known faults in the world. It extends over 600 miles from a point where it disappears in the ocean north of San Francisco to the southeast edge of the Salton Sink, where it is lost in the old fan of the Colorado River. It passes through southern California on the north side of the San Gabriel Mts., cuts through Cajon Canyon, follows the front of the San Bernardino Mts., then goes southward to the east edge of the Salton Sea, gradually disappearing in the direction of Mexico. The best place to see this fault is in Cajon Canyon. The canyon is formed by a series of parallel faults with crushed zones and narrow up and down faulted block. This produced a more easily eroded zone than the adjacent areas, therefore it was worn down more rapidly, forming the canyon. The San Andreas Fault follows the edge of the mountain on the east side of the road to a point where it crosses Highway 66 about one half mile northeast of the "Blue Cut", and then goes through to the desert by way of Lone Pine Canyon.

In southern California there are also many places of special interest to the mineral and rock collector, such as Crestmore in San Bernardino County for contact minerals, Pala-Rincon-Mesa Grande area in San Diego County for semi-precious stones in pegmatites, and the deserts for the chalcedonies.

Whether or not you are looking for rocks, you can't very well avoid them, so you might as well know something about them. It might be interesting to know, some warm, sunny day when you are struggling through the brush in search of wild flowers, that the clean, coarse, cross-bedded sand you may be walking on is an old beach and that if you had been there several million years ago you might be waist deep in the ocean.

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## READING THE ROUTE FROM "HERE" TO "THERE"

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Felix Locher, Locher-Hall Telecurve Co., Los Angeles, Calif.

Man has to read many and varied things during the span of his life. The one thing that is always closest to man, throughout his life, is the Earth upon which he lives. So it becomes a matter of importance for him to read the Earth, to learn how best to make it serve him, and to find a comfortable "Here" upon which to settle down.

No one living upon the Earth can ever at one time see it in its entirety. The Earth is too large for that. On March 7, 1947, photographs were taken from a V-2 Rocket, at an altitude of a hundred miles over White Sands, New Mexico. The photographs showed the largest expanse of the Earth's surface photographed to that date. The area shown in the pictures represented a little over 200,000 square miles, which is about one-fifteenth of the area of the United States.

Nevertheless, man has developed some astonishingly accurate representations of the Earth, enabling him to read large portions of it at will. For example, we have the globe which represents the whole Earth with remarkable accuracy, provided the globe is well made. By *reading the globe* correctly, we may draw conclusions as to how the Earth as a whole looks, especially in respect to the geographical relationships of the many nations.

Similarly, for portraying parts of the Earth, we have maps which we may use. When correctly interpreted, these maps tell us how certain parts of the Earth look, even though we may not read those parts of the Earth directly; thus, in the study of global geography, the globe and the maps are essential source materials. But, in order to use these materials effectively, one must know how to read the language of the globe and the language of the world map. While the need for this knowledge has always been great, it has tremendously increased in recent years by man's conquest of the air, which in terms of human relations has brought all nations much closer together. This "closeness" came about through modern means of air transportation and radionic communication.

Among the important functions of man in his useful relationship with the rest of the world is travel. Travel includes the movement of people, products, or commodities, from one continent to another. In all travel, three basic elements are involved, namely, direction, distance, and time. It has always been man's desire to go from a place called "Here" to some other place called "There." Among the three elements of travel, the element of direction is primary, so the traveler's first question is: "In what direction shall I start?" The secondary question will be: "How far is the place called 'There' from the place called 'Here'?" and finally, "How much time will it take to make the trip?"

When travel questions have to do with local areas, there are many kinds of important local factors that may have to be considered. For example, a traveler once inquired of a farmer about the shortest road to a certain tourist camp. The farmer replied, "You may take the valley road.



But no, now that I come to think of it, the bridge was washed out in last week's storm. Your only other choice is to take the short-cut over the mountain. But wait! I guess you better not take that one either, because there was a landslide during the storm, and more than a hundred yards of the road slid down the mountainside. I tell you, Mister, if I was going to that place, I just wouldn't start from here."

Local factors, however, for the most part become minor adjustments whenever world-wide travel questions are involved. Then, entirely new problems are faced requiring the careful examination of new, major factors, including the understanding and application of the global language. The language describing the globe is a spherical language. The old concept that a straight line is the most direct and therefore the shortest route between "Here" and "There" cannot be applied in reading global measurements. Curved surfaces cannot be treated the same as flat, or plane, surfaces. Since all flat world maps are necessarily adaptations from spherical surfaces, distortions are unavoidable and therefore the maps often give faulty impressions. In worldwide travel from "Here" to "There," one must learn how to read world maps properly in order to avoid making errors due to the distortions which are inherent in the construction of such maps. As you continue reading the step-by-step developments which follow, you will be agreeably surprised to find how easily these distortion-difficulties have been overcome.

A few months ago, one of the large American airline companies sponsored the publication of a flat air-world map which pictured distances along straight lines. The distances were measured in standard units represented by small airplanes. A school-teacher used that map in her classroom to stimulate an interest in global geography. A detailed account of her experiment was published and nationally distributed by the sponsor of the map. All of this might have been to the good, except that the map was accepted as reliable, when actually it was badly in error and might easily have been checked prior to making the unfortunate classroom experiment. As a result, every answer given by the children and reported in the article was in error. The errors were not minor. Some were hundreds of miles short, while others were hundreds of miles long. This was inevitable, since the map itself was in error by over a thousand miles in its north-south axis, and in like manner, the distance from the central point of the map to Perth in Australia, was in error by more than 1,000 miles. The adage, "It must be so. I saw it in print," should be applied with care not only as regards printed words, but as regards printed maps as well. This applies especially when one is reading unconventional map projections with which the reader is not familiar.

Basic directional ideas may be related to age-old Earth experiences. For example, for millions of years, twice a year (we now call these dates March 21st and September 23rd) the direction of sunrise is exactly opposite that of sunset. This is easily and readily observed. Facing in the direction of sunrise one will have a left-side direction (north) and a right-side direction (south). In other words, the idea of east-west and coordinate north-south direction can be established whether or not one has any knowledge of the Earth's rotational movement.

However, when rotational movement is established (by which the sun

appears to rise and appears to set as it does) it suggests somewhat different concepts for basing the directional element in travel from "Here" to "There." Then the central axis around which the Earth rotates becomes important. The North Pole and the South Pole become established as basic directional points. As such they assume a new significance. These poles now represent definite geographical locations on the Earth. The great circle lines passing through these poles may be used both to measure east and west distances along the equator, and to represent, by themselves, the lines which indicate north-south directions.

The discovery of certain magnetic properties and the subsequent invention of the magnetic compass instrumented the use of basic north-south orientation. One end of a magnetic needle always seeks the magnetic north, but the direction is not exactly the same as that of the geographical North Pole which was established by the rotational axis. Therefore, there are magnetic poles as well as rotation poles. The question then arises, *may there not be other polar functions of the Earth?* When we become concerned with world-wide great circle distances and great circle routes for air flights and for radio beams, the magnetic poles and the rotation poles are inadequate. New reference points on which to base the great circle computations are needed.

In traveling from "Here" to "There" we may proceed in many different directions. But, in considering the elements of distance and of time, we find that certain directions are more economical than others. A good example of this is given in the story of a visitor to Southern California who became confused and who could not find his way among the multitude of highways. In desperation, he approached a traffic officer with a question: "How far is it to Los Angeles?" The officer, after a moment's hesitation, replied, "About twenty thousand miles the way you're headed, but if you turn around and go in the opposite direction, it will be only twenty miles."

Since, for all practical purposes, the Earth is considered to be a sphere, the shortest distance from "Here" to "There" will be the distance measured along a *great circle route* which passes through both "Here" and "There." Hence, for air-age and for radio-age uses, there is an urgent need for maps which show such great circle routes. For these maps there are no constant *poles*. Any geographical point representing a focal interest may become the "Here" pole of such a map, and the antipodal point (the diametrically opposite place on the Earth) will then become the map's "There" pole. For this function, the "Here" and "There" poles may properly be termed *route poles*. The great circle routes passing through the respective route poles are the *route meridians*. Just as in map-reading, the north-south directions are indicated by the standard meridians extending between the geographical poles, so also are route directions for flight and radio beams indicated by the route meridians.

In the demonstration reading lesson which follows, an uncradled globe and a string is used to help the globe reader compare first of all the length of various routes from the North (rotation) Pole to the South (rotation) Pole. The string has a knot at each end, and when tightly stretched, should be of a length such that it will exactly encircle the globe used. At the mid-point of the string, a marker of a contrasting color has been tied. The

string is now loosely draped on the globe in the manner illustrated in Fig. 1, using up the entire length of the string. The knot ends are at the respective rotation poles and the mid-point marker lies somewhere along the equator.

With the string held in that position, it is obvious that the route indicated by the zig-zag line of the string is *not* the shortest route from the North Pole to the South Pole.

Now the string is tightly stretched as illustrated in Fig. 2. All semblance of a zig-zag has been eliminated. The mid-point marker has now moved to the South (rotation) Pole. The free string-end hanging loosely from the South Pole represents the full saving in mileage over the zig-zag route No. 1. Since there can be no further stretching of the string, and therefore no further saving in mileage, there can be no shorter route between those poles.

When the string is lifted from the globe, one of the countless rotational meridians will be found to lie directly beneath where the string lay. That meridian will now become exposed. It may be one of the twenty-four standard meridians which are drawn on most globes, or it may be one of the other meridians not actually shown on the usual globe. Since all meridians are identical in length, any *one* of them represents the shortest route from pole to pole through any point or points along that meridian.

In Fig. 2 the particular meridian underlying the string is the 75th

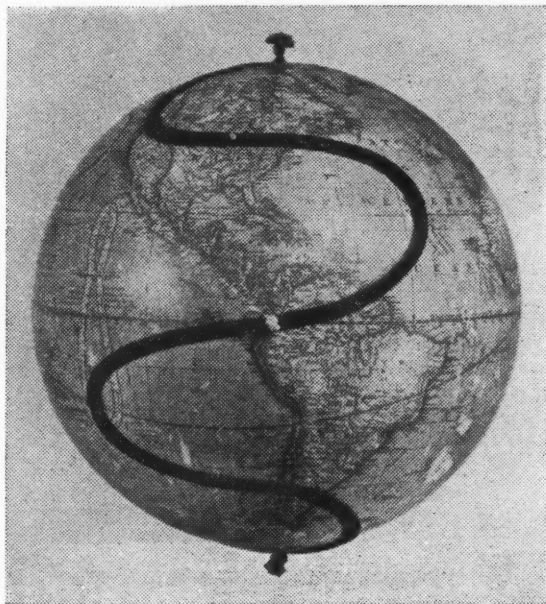


Fig. 1

standard meridian (West longitude from Greenwich) and, as shown, it passes through North and South America. Along the path of this meridian are the cities of Philadelphia and Bogota (South America). Therefore, the shortest distance between these two cities is measured along the 75th meridian—that is, in a due north-south direction. Any other route from Philadelphia to Bogota is necessarily a longer one for it would represent a "zig-zag" path.

All that has been demonstrated with the string when it is stretched tightly over the 75th W. meridian is equally applicable to the 105th E. meridian which is on the diametrically opposite side of the globe. This can be demonstrated very easily by tightly stretching the loose end of the string to the North Pole over the 105th E. meridian. By this operation the entire length of the string has been used up, the mid-point remaining at the South Pole and the two knot ends meeting at the North Pole. To make the string serve as a full ring, one has merely to tie the two knots together by a separate piece of twine or a rubber band. (See Fig. 3.)

The position of the knots at the North Pole with the mid-point marker



Fig. 2

at the South Pole is shown in Fig. 3. Considering the string to be a rigid ring, the globe-reader may ask himself the question as to what that ring really looks like. Almost every globe-reader arrives at the same answer: "A circle." Since this tightly stretched string-circle is as great a circle as can be made around the globe, it is called a "great circle." Any tightly stretched portion of the string such as that shown in Fig. 2 is called an "arc" of a great circle. Thus one has read from the globe that it takes *two* full, opposite and joined *meridians* to form *one* full *great circle*. (Technically, of course, a great circle is a circle on the Earth's surface formed by the intersection of that surface with a plane passing through the center of the Earth.)

The fundamental rule has thus been established that the shortest route between "Here" and "There," when these two locations lie due north-south with respect to each other, is always measured along the meridian which passes through them.

When the string is tightly stretched, as shown in Fig. 3, with the knots at the North Pole, the mid-point marker, just half-way around the world, lies at the South Pole, which is diametrically opposite the North Pole. This location is called the "antipodal point" with relation to the North Pole. On the other hand, the North Pole is the antipodal point with relation to the South Pole.



Fig. 3

Furthermore, we read from the globe that the North Pole is at latitude 90 degrees north of the equator and the South Pole is at latitude 90 degrees south of the equator. Hence, the two poles are 180 degrees apart, or half-way around the world from each other, and the equator (latitude 0 degrees) is midway between them.

Whenever the string is in the form of a circle, whether or not it is applied to the globe, the mid-point marker is diametrically opposite the joined knots, and therefore always represents the antipodal point with respect to the knots. Accordingly, no matter where the knots may lie when the string tightly encircles the globe, the location beneath the midpoint marker will always be the antipodal point with relation to the location beneath the knots.

The globe-reader notes that the meridian represented by the tight portion of the string as applied in Fig. 2, crosses the equator at one point, and that the meridian represented by the rest of the string-circle, as applied in Fig. 3, crosses the equator at another point. It is assumed the globe-reader desires to determine the distance, *along the equator*, between these two meridians, so, if he knows the location of only one of them, he can calculate where the other should be. When in position shown in Fig. 3, these two equator crossings occur at the 75th W. and 105th E. meridians.

Now the string-circle is readjusted so it coincides with the equator as shown in Fig. 4.

The knots are on the 75th meridian and the mid-point marker is on

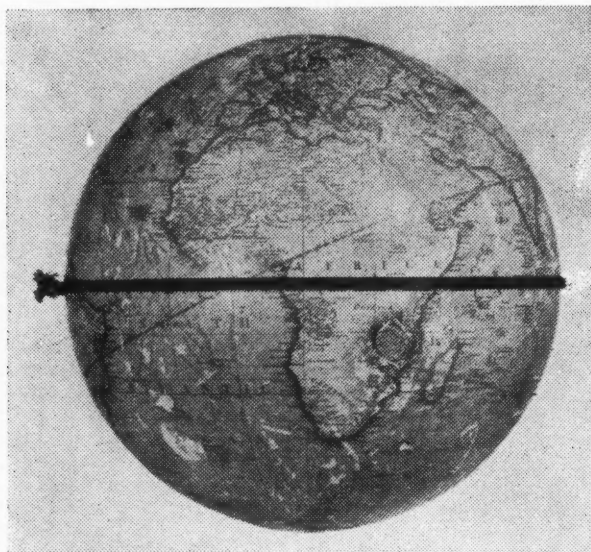


Fig. 4



the 105th meridian, both the knots and the marker lying on the equator as well as on these two opposite meridians. From what the reader already knows, these two meridians are exactly halfway around the world from each other, or 180 degrees apart, as *measured along the equator*. (Check: 75 plus 105 equals 180.) This represents a distance of 12,430 statute miles, or the distance half-way around the world.

It is now assumed that New York lies on the 75th W. meridian because the 74th meridian on which it actually lies is not marked on most globes. Suppose the globe-reader wants to find the antipodal point with respect to New York. He has already established the antipodal meridian as being the 105th E. meridian, but now he wishes to calculate just *where* on that meridian the antipodal point lies. So he places the string circle back on the globe as shown in Fig. 3, and then slides the knots toward the position shown in Fig. 5, not all the way to New York, but perhaps just about one inch closer to the equator. As the knots move, for instance, one inch closer to the equator, the mid-point marker (antipodal point) likewise moves one inch closer to the equator though it moves northward as the knots move southward. Therefore, since the knots and the marker started (as in Fig. 3) at the same distance from (though at opposite sides of) the equator and move the same distance from their starting point, the marker will always be the same distance south of the equator as the knots are north of the equator.

The reader continues to slide the string until the knots exactly overlie



Fig. 5

New York. When they have been moved down from the North Pole a sufficient number of degrees to reach the location of New York (as shown in Fig. 5) the mid-point marker must have moved exactly the same number of degrees up from the South Pole to reach the location of the antipodal point with relation to New York. Since the knots and the marker were, at the start, the same number of degrees from the equator, this equal but opposite movement puts the marker at exactly the same number of degrees (41 degrees) south of the equator as New York is north of the equator.

Thus one has learned to read from the globe the fundamental rules that the antipodal point, with respect to *any* given location

- (1) lies on the meridian which is eastward or westward half-way around the globe or 180 degrees from the meridian on which the given location lies; and
- (2) lies exactly the same distance (in degrees or miles) at one side of the equator as the given location lies at the other side of the equator.

The globe-reader now wishes to check various flight directions around the globe. To do so, he first readjusts the string-circle to the position shown in Fig. 3. He then traces with his finger the entire route from the knots down to the mid-point marker, always following exactly the 75th meridian, thus constantly moving his finger in a due southward direction. The instant his finger hits the mid-point marker and starts on the return trip, the flight direction is abruptly changed from due south to due north. Now the finger continues to move in a due northward direction until the knots are reached

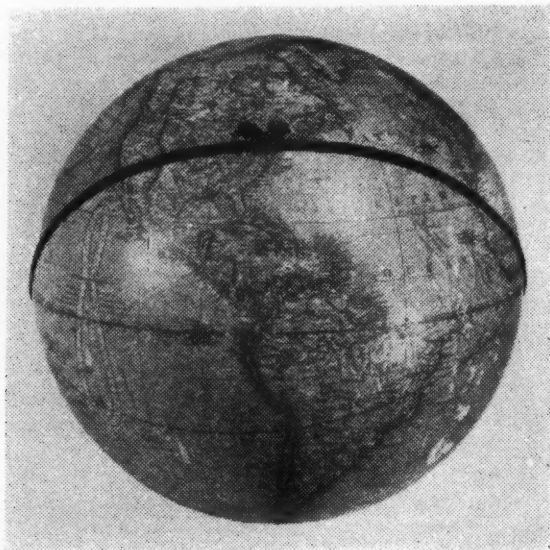


Fig. 6



from where the trip started. The globe-reader may now remove the string-circle and then repeat the above operation a number of times, except that different pairs of opposite meridians are used. Thus he has established the fact that, in encircling the globe and passing through the poles, a flyer, no matter what meridian he chooses for the flight as he leaves the North Pole, *must* follow a due south direction until he passes over the South Pole where, abruptly, he *must* change to a due north direction and continue in that direction until he is again at the North Pole.

The above applies only to due north-south flights. With the *single exception* of the great circle route represented by the equator, *all other* great circle flights theoretically involve a *continual change* of flight direction from start to finish no matter whether the route covers only a short distance or extends fully around the globe.

Before examining the other routes, the globe-reader first checks the single exception where the great circle is represented by the equator itself. He readjusts the string again as shown in Fig. 4. Now, as he slowly rotates the globe, he notes that the string never "zigzags" toward the north or the south poles, but always runs due east or due west, depending on which way the globe is being rotated. In other words, while encircling the globe along the equator, a flyer has *never changed direction*. He was always flying due west, or due east, depending on the direction in which he started.

The globe-reader now decides to check flight directions in connection with great circles that follow neither meridians nor the equator. For that purpose he adjusts the string-circle to the position shown in Fig. 6 and 7.



Fig. 7

The joined knots are at New York and the mid-point marker lies over the antipodal point. In examining the direction of the string as it passes through New York, we find that it extends generally east-west with very little southerly inclination.

The globe-reader now slowly rotates the globe from west to east. He notes that the string gradually swings toward a general southerly direction until, when it crosses the equator, it almost follows a true south-west direction. Continuing the rotation of the globe, he notes that the southerly inclination of the string diminishes until, at the antipodal point, the string has the same characteristic it had at New York except, as shown in Fig. 7, it starts to swing in a general northerly direction. As the equator is crossed, the string follows almost a true north-west direction. Upon further rotation of the globe, the northerly inclination of the string diminishes until New York, the original starting point, is reached.

Thus it has been established from the globe that the direction of flight gradually and constantly changes as the globe is encircled. As seen on the globe, the route illustrated cuts each successive meridian at a different angle. This makes accurate flight direction readings rather difficult. Later, this same matter will be considered in connection with Telecurve maps. It will

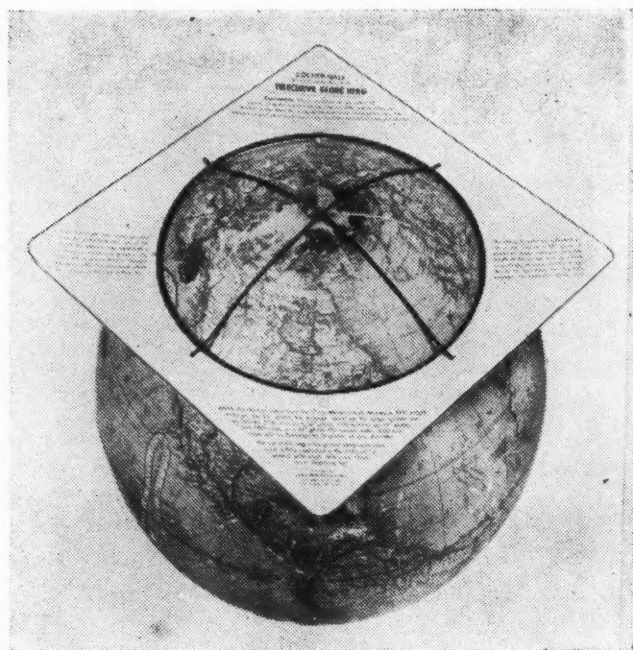


Fig. 8

then be seen that while the globe and the maps are in agreement in this respect, on these maps this change in flight direction is easily read.

If the globe-reader wishes, he may also check this constant change-of-direction by applying a ruler to the globe and in tangency with the string at New York. Then holding the ruler constantly tangent to the string and moving it around the globe, the swing of the ruler about the changing points of tangency will visually indicate the constant change of flight-direction, very much in the fashion of a compass needle.

One can well understand why, in actual flying experience, it is impractical for the pilot constantly to change his flight direction. He would have to do that were he to follow exactly a great circle route which has a continually changing direction.

The flyers solve that problem simply by "subdividing" the entire route from "Here" to "There" into short, constant-course, "rhumb lines" which are called chords. Each chord follows as nearly as possible the general direction of the originally outlined great circle route. It is obvious, however, that the individual chords, by themselves, do not represent great circle routes. Yet flying chord after chord successively, as the pilot does, one finds that the general course of such a flight deviates very little from the "theoretically shortest" great circle route, as used in our example.

Thus the following fundamental rules regarding great circle flight directions have been established and demonstrated:

1. If the great circle route is due north-south and passes over either pole, there is only one change of flight direction, this change occurring abruptly the instant a pole is crossed;
2. If the great circle route is due east-west and coincides with the equator, there is no change of flight direction.
3. All other great circle routes involve a continual and gradual change of direction regardless of length of route.

With the string-circle in the position as shown in Fig. 6 and 7, other interesting great circle characteristics may be noted by the globe-reader. For example, one sees that on the route illustrated, New York (lat.  $41^{\circ}$  N.) lies at a location which is farthest north from the equator, and the antipodal point (lat.  $41^{\circ}$  S.) lies at the location which is farthest south of the equator. These "highest" and "lowest" points on every great circle route are called the "North Vertex" and "South Vertex," respectively. They are always half-way around the world from each other, or  $180^{\circ}$  apart.

Another feature to be noted is that the two equator-crossings of the route occur on locations also half-way around the world from each other. In other words, we find that the two equator-crossings of a full great circle route not only lie half-way around the world from one another, but also lie half-way between the two vertices. Thus one can read from the globe that every individual great circle route from "Here" to "There" follows a perfectly symmetrical pattern.

Still keeping the string-circle in position shown in Fig. 6 and 7, one notes that the flyer on his great circle flight around the world eventually passes over southeast Australia. However, it will be observed that when he started on this great circle flight from New York, he was initially heading about due west.

Any point on the globe lying under the knots (New York in Fig. 6) may be considered as a "route pole". Any point on the globe lying under the marker (see Fig. 7) may be considered as an "antipodal route pole".

Other cities on the globe may now be selected as route poles. For example, it is assumed that a great circle route similar to the one illustrated in Fig. 6 and 7 is being planned with Los Angeles as the route pole. It is only necessary to replace the string-circle on the globe so that the knots lie over Los Angeles, and that the string extends through that location in a general east-west direction with very little southerly inclination. Since Los Angeles is located at latitude  $34^{\circ}$  N., the antipodal route pole, necessarily must lie at latitude  $34^{\circ}$  S. and must also lie on the standard meridian which is diametrically opposite the standard meridian passing through Los Angeles.

After the string-circle has been placed on the globe as explained above, it will be found that the antipodal location is southeast of Madagascar in the South Indian Ocean. One will further note that at this location the string will have the same characteristics as it had in Los Angeles, except that it will now have very little northerly inclination. One will further note that the flyer eventually passed over northwest Australia during his great circle flight around the world. However, it will be observed that when he started on this great circle flight from Los Angeles, he was initially heading about due west, just as he was heading about due west when he left New York on a great circle flight to southeast Australia.

With the aid of the string-circle, one can easily demonstrate that, except for the equator, none of the latitude parallels qualifies as a great circle. For example, in draping the string loosely around the globe so it actually follows a latitude parallel, there will always remain some unused string. This could not happen if the parallel were a great circle, for in that case the full length of the tightly-stretched string-circle is used up.

Furthermore, it is impossible to stretch the string tightly over the globe and to follow at the same time a latitude parallel. Such a tight string automatically will seek the shortest direct great circle path from "Here" to "There." It will swing toward the north pole if the distance is measured north of the equator, and it will swing toward the south pole if the distance is measured south of the equator. When tightly stretched, it will have settled exactly over the particular great circle route connecting "Here" and "There."

By reading the globe as above, one has established the following fundamental rule:

When "Here" and "There" lie both on the same latitude parallel—except at the equator—the shortest direct airline route between them is never measured along that parallel. It must be measured along the great circle route passing through "Here" and "There."

We have been accustomed to read latitude parallels as indicating distances in degrees, measured north and south of the equator. Now, under the Telecurve system, these latitude parallels are put to an even greater use. They are visualized as representing *distances in miles*, measured from the North Pole. This can be demonstrated very easily from the globe. We will simply assume that on our globe the latitude parallels have already been equally spaced, exactly one thousand statute miles apart beginning at the

North Pole. Now, the North Pole of our globe, in addition to being the rotational North Pole, takes also the function of a great circle *route pole*. From this route pole radiate many north-south *route meridians* (in this instance, the standard meridians). Along these route meridians the great circle distances are indicated at 1,000-mile intervals.

With the entire globe marked and scaled as explained above, a person can read directly from that globe that a given "There" location is approximately so many miles away from the "Here" route pole (North Pole) as measured by direct airline over the route meridian passing through the "Here" and "There" locations.

The question now is suggested, "Is there any reason why this whole great circle route and distance pattern should not be put to practical use in the study of global geography when route poles other than the North Pole are involved?"

The globe-reader may answer that question for himself by applying the "Telecurve Globe-Ring" as illustrated in Fig. 8.

In the illustration, the Globe-Ring is shown centered over the North Pole of a 12-inch globe.

All points touched by the ring are 3,000 statute miles by shortest airline from the string intersection in the center of the Globe-Ring. The tightly stretched strings represent arcs of great circle routes (route meridians) radiating from the central string intersection. Each full-length, tightly stretched string, passing over the globe from one side of the Globe-Ring to the opposite side, represents a continuous great circle arc (route meridian) of 6,000 statute miles which passes directly through the geographical location (route pole) over which the central string intersection lies.

The globe-reader will have no difficulty in convincing himself that the geographical outlines of the world never change, no matter over what city the globe-ring may be centered. For example, he might wish to center it successively over the following widely-separated cities: Chicago, London, Moscow, Buenos Aires, Sydney, or Honolulu. In every instance, the sizes, shapes, and positions of continents, coast line details, islands, and oceans as shown on the globe remain unchanged. The globe-reader, with the aid of the Globe-Ring, simply has read the world as viewed from different route pole centers—the world itself never changes.

The Telecurve maps have come into being after years of research and after countless calculations in collaboration with nationally recognized scientists, educators, and technical advisors. Fully to appreciate the vital need that has been filled through this introduction, one must realize the following points, viz: (1) that a flat map, naturally, does not have the symmetrical characteristics of a sphere; (2) that a given great circle pattern cannot be centered at various locations all over a flat map as was true in connection with the Globe-Ring which the globe-reader could conveniently center over any desired position; (3) that since all Telecurve maps are based on the familiar Mercator world projection, it is necessary to take into account distortions which are inherent in that projection; and (4) that these distortions necessitated the calculating and plotting of an individual great circle pattern for each individual latitude.

Every one of these transition-difficulties has been successfully overcome.

As a result, in the Telecurve Maps the spherical language of the globe and the language of the flat world maps have become reconciled.

Briefly, here is what can be read easily, quickly, and accurately from a Telecurve world map, regardless of the starting area (route pole) of the particular map used.

First—the shortest air route from “Here” to “There.”

Second—the shortest airline distances from “Here” to “There.”

Third—the true compass directions from “Here” to “There.”

Fourth—comparative widths across areas from “Here” to “There,” everywhere on the map.

Fifth—immediate, accurate, comparative time and date from “Here” to “There.”

The map illustrations which follow are miniature reproductions of Telecurve maps.

Because great circle routes, distances and directions are *graphically portrayed* on the Telecurve world maps, the answers, obviously, can be *read directly from the map*, regardless of starting area (route pole). All distance answers are given in statute miles as measured along the great circle route curves (route meridians) of the map used. In other words, one *always reads immediately* from the map the *correct answer* for the *shortest* airline distance measured over the *shortest* airline route from “Here” to “There.”

“There” on the Telecurve map may be any desired location. “Here” need not necessarily be the route pole (starting area) of the map. It, too, may be any desired location. However, if a location other than the route pole is selected for “Here,” no matter how close together or how far apart “Here” and “There” may be, these two locations *must* lie on the same route meridian when one reads the shortest airline distance between them.

In the examples discussed below, a number of simplified terms will be used:

The starting area will be called “route pole”;

A great circle route curve “route meridian”;

A great circle distance curve “distance latitude”;

The antipodal point which is diametrically opposite the starting area of the map “antipodal route pole.”

On every Telecurve map, regardless of route pole, the shortest airline distance measured along a route meridian between two adjacent distance latitudes is exactly 1,000 statute miles, everywhere on the map. On each distance latitude, a printed number indicates the total number of miles from the route pole to that particular distance latitude. The first distance latitude on each map is marked 1,000 (miles) and the last distance latitude is marked 12,000 (miles). There remains a final distance of 430 miles from the last distance latitude (12,000 miles) to the antipodal route pole (tiny circle on the map) which is 12,430 statute miles from the route pole of the map. No matter what route meridian is followed, this final distance of 430 miles should be taken into account. Thus one finds that the shortest airline distance from route pole to antipodal route pole, half-way around the world, is always 12,430 statute miles no matter what route meridian is followed.

If “There,” for example, lies exactly on the 6,000-mile distance



latitude, the total mileage from the route pole to that location obviously is read as 6,000. If "There" lies, for example, half-way between the 6,000 and 7,000 distance latitude, the answer is 6,500 miles; or if "There" lies about one-third past the 8,000-mile distance latitude, the answer is read as about 8,350 miles.

However, any such fractional intervals which one measures between two adjacent distance latitudes must always be measured along the indicated route meridians if shortest airline distances are to be read.

#### Los Angeles-based Telecurve World Map

From a LOS ANGELES-based Telecurve world map (see Fig. 9) one reads that the shortest airline distance to *Warsaw* (Poland) is 6,000 miles, and that the shortest airline over which that distance is measured goes by way of Canada, Hudson Bay, Baffin Bay, Greenland, Norway, Sweden, and Danzig.

Similarly other distances and routes are:

To *New York*, 2,450 mi.

To *Natal* (Brazil), 6,000 mi. via Cuba and Trinidad.

To *Moscow* (Russia), 6,075 mi. via Arctic Region.

To *Sverdlovsk* (Central Russia), 6,150 mi. via North Pole.

To *Buenos Aires*, 6,150 mi. via Mexico and Peru.

To *Bangkok* (Thailand), 8,350 mi. via Dutch Harbor, Kamchatka and Vladivostok.

Since all usable radio waves follow great circle routes (route meridians), a D-X radio operator in Los Angeles, in a matter of seconds, reads from his Los Angeles-based map that, to receive properly from a station in Cairo (Egypt), he must adjust his direction indicator as though he were receiving from Regina (Canada) or from Berlin (Germany). The same operator, to receive properly from a station in northern Madagascar, which lies about 1,000 miles *south* of the equator, must adjust his direction indicator as though he were receiving from northern Quebec, which lies over 4,000 miles *north* of the equator.

#### Moscow-based Telecurve World Map

From the MOSCOW-based Telecurve World Map (Fig. 10) one reads directly the following startling fact: The shortest airline distance to *every city in the United States* (except cities in Southern California and Southern Texas) is less than 6,000 miles! One also reads that practically all the route meridians over which the shortest airline distances to the American continent are measured pass over Finland, Sweden, Norway, Greenland and Canada.

To *Los Angeles*, 6,075 mi. via Arctic Region.

To *New York*, 4,675 mi. via Norway, Sweden, Iceland, Cape Farewell, and Labrador.

The above described New York route also happens to be the shortest direct route from Moscow to *any* city on the east coast of the United States.

To *Fairbanks* (Alaska), 4,075 mi. via North Pole.

To *Capetown* (South Africa), 6,275 mi. via Egypt, Anglo-Egyptian Sudan, and Belgian Congo.

In this instance "Here" (Moscow) and "There" (Capetown) are almost

due north-south of each other. Therefore the distance, read as 6,275 miles directly from the map, may also be checked by counting the number of latitude degrees between these two cities, and multiplying the total number by 69 which is the value in statute miles of one degree, as follows: Moscow is at lat.  $56^{\circ}$  N., Capetown is at lat.  $34^{\circ}$  S.;  $56$  plus  $34$  equals  $90$ ,  $\times 69$ , equals  $6,210$ . On every Telecurve map, regardless where the route pole may be, all due north-south distances may be determined very quickly by referring to the vertical scale furnished with each Telecurve map.

Furthermore, from the Moscow-based map, one may also read that Greenland, at its greatest width along the top of the map, is about 700 miles wide, although Greenland appears to be of the same width as Australia.

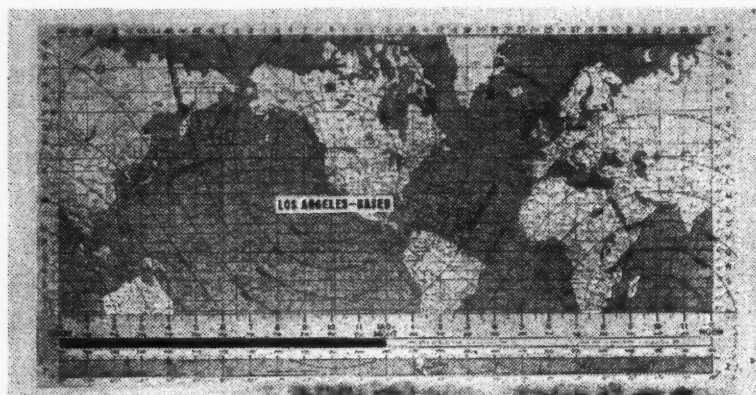


Fig. 9

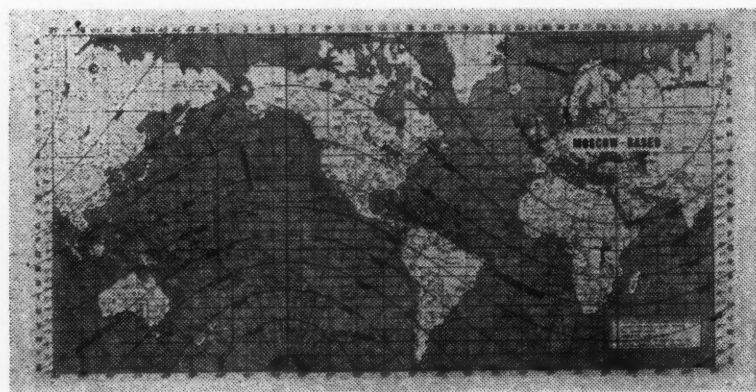


Fig. 10



Australia, however, is read as almost exactly 2,000 miles wide. Similar widths of areas may be compared on any Telecurve map regardless of route pole.

With each Telecurve world map there is furnished a time band and a world index. The time band is marked off to represent both the 12-hour a.m. and p.m. clock-time, and the Army and Navy 24-hour clock time. In Figure 9 the time band has been laid horizontally across the map so that midnight coincides with time zone line 13 (Central Standard Time), and that the two noon marks (one at each end of the band) lie on line 37. In that position, the time band gives comparative time and date *throughout the world* when it is 10 p.m. (2200) by Pacific Standard Time on time zone line 9.

We should not forget to be grateful that Gerhard Mercator (1512-1594) was such an excellent mathematician, cartographer and map reader. His famous world projection, which was named for him, is, and has been for nearly 400 years, the basis for most navigational charts. It is also the basis for all Telecurve maps, as already demonstrated.

True, in the past when using the Mercator world projection for answering world-wide global geography questions, unless one could read that projection correctly, many of the answers *had* to be pure guesswork—and, as one might expect, a large percentage of the guesses were wrong.

However, the Mercator world projection has many inherent advantages, all of which have been preserved in the Telecurve system. For example, it avoids the difficulties of constantly changing geographical outlines of the world such as sizes, shapes, and bodies of water, every time a *new* route pole is chosen. In the Telecurve system the great circle patterns have been adjusted to fit one world, not the world to fit a certain pattern. Even if he had a hundred different route poles, the map-reader always sees the same familiar world projection before him. The world never changes.

The writer hopes that every reader who has been patient enough to follow this global geography discussion, step by step, from beginning to end, may have acquired at least some additional understanding of the simple fundamentals in regard to great circles "From HERE to THERE."

*He who lives confined within his own personality  
limits his mental horizon. He who reaches out for wider  
knowledge, embracing the universe, creates for himself a  
mental horizon that is unlimited.*

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## Division II

### Reading Personal Factors Affecting Reading Abilities

*"One cannot measure intelligence without inferring that experience is also measured in an indirect fashion. Academic tests involve areas far wider than the topics they indicate. The integration of such factors are so closely woven together in the child that any response reveals many attributes or tendencies.*

Florence Mateer

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# READING PERSONAL FACTORS AFFECTING READING ABILITIES

## *Introduction*

This reading conference has consistently emphasized that it is individuals (persons) who do the reading. Whatever factors affect the functioning of the individual, potentially at least, affect his abilities to make discriminative reactions, i. e., to read. The discussions for this yearbook have been grouped into three subdivisions having to do respectively with visual factors, aural factors, and psycho-physical factors.

## *Visual Reading*

Dr. Wirt has done an unusual service in making analysis of visual factors affecting industrial competency. The article on Achievement of Grade School Pupils in Relation to Visual Performance reports the first use of the Ortho-Rater in determining visual factors affecting the visual reading of printed words.

The use of visual tests and follow-up treatments for those who show a need of them is reported by Dr. Krous. His is an account of how an elementary school attacked the problem of visual deficiencies among its pupils.

Normal Eyes for Reading, an article by Dr. Gregg, takes issue with those who think that vision is a minor factor affecting abilities to read printed words. Efficient near point seeing must be achieved through learning. Vision education is a partial answer to this condition.

Orthoptics is a term with which students of reading must become familiar. Miss Lancaster discusses this important aspect of vision education in connection with reading disabilities. There appears to be mounting evidence that more efficient seeing can be achieved by means of properly administered orthoptic treatments.

Dr. McQuarrie and Dr. Hansen give a practical discussion of "Vision Training." This is a type of vision education which produced wonderful results in special aspects of the armed services' developmental programs.

Dr. Eames has long been a student of vision as it affects the reading of printed symbols. His articles are always read with interest and profit. This present report of the Effect of Premature Birth on Vision and Reading Failure is stimulating and informative. The analogy with the partially baked cake may suggest a thought to the reader.

## *Aural Reading*

Willard Hargrave is Executive Director of the Auricular Foundation, a non-profit service to people with crippled hearing. Mr. Hargrave is no stranger to the Claremont Reading Conference nor to readers of the year-

books. His present article, Aural Reading and Child Maladjustment, is replete with thought provoking statements. Aural Reading is a neglected phase of the total reading program. Mr. Hargrave is well aware of the human misery and misunderstanding which results from that neglect.

The Classroom Teacher and the Aurally Handicapped Child is an account arising from the experiences of Ethel Carter as a special teacher of reading. The suggestions are based on her daily practices.

Among the many types of stimuli to be read is speech. The Need for Speech Reading is common to all but is especially great, as Miss Sample indicates, for those who have suffered serious loss of hearing.

Speech is a normal stimulus for aural reading. Mrs. Wedberg discusses the Relation of Speech to Reading Readiness. Sound discrimination is very important. This is a plea for that aspect of reading to be better done.

What could be more natural than to close the visual and aural sections of this yearbook with a statement of Trends in Audio-visual Education! Mr. McNay is well aware that aural and visual reading supplement and implement each other.

#### Psycho-physical Factors Affecting Reading

The conferees and readers of the yearbooks are well aware that many factors affect abilities to read. Since vision and hearing are major stimulus areas they have received most attention, but as we delve more deeply into reading behavior other factors are brought into comparable awareness. No one has added more to knowledge of such things than has Dr. Mateer. The Child and His Quotients presents a thought provoking treatment of the interrelatedness of many factors. *The child as a whole does his reading.*

Compulsive Reading is a new term to this conference. However, the phenomenon is well known. Dr. Conrad's discussion of five types of compulsive reading will bear careful study.

Dr. Houloose spent several years reading the G. I.'s and what the armed services attempted to do for them in mental hygiene guidance and development. The lessons he draws for education are well founded.

Reading the community from the point of view of health is Dr. Kelley's vocation and avocation. We, the People! are responsible for Our Health and Welfare. There are many indications that we are performing these acts of reading less effectively than we should.

If there are those who believe that poor ability to read is unimportant, they will be shocked by Mr. Yager's account of Reading in a Correctional Institution. The reading of books may replace the reading of other types of things when book reading ability can be accomplished with facility.

Perception is the next frontier for students of the reading process. Dr. Hawk presents data to support her belief that Audito-visual Perception and Reading Success are closely related.

## VISUAL READING

### ACHIEVEMENT OF GRADE SCHOOL PUPILS IN RELATION TO VISUAL PERFORMANCE

*S. Edgar Wirt, Ph.D., Clellan L. Morgan, Purdue University, Indiana,  
and William Floyd, School Superintendent, Indiana*

While assumptions with respect to "good vision" for school children have often proved disappointing in correlation with scholastic success, it is possible to identify certain visual characteristics that do relate to relative success or failure in school. These results are possible by comparing the visual traits of the more successful and the less successful pupils, and by determining those characteristics of vision that best differentiate the two groups. This method does not involve any preliminary assumptions at to what constitutes "good vision" for school children.

For the present study 248 pupils in grades three to six had been tested on the Stanford Achievement Test. Their scholastic success is described in terms of relative standing on that test. Achievement on such a test is, of course, only one aspect of school success, but one that is objective and that can be studied statistically.

These same children were tested also for visual skills on the Ortho-Rater (Bausch and Lomb Optical Co.), a precision instrument developed and validated for the measurement of visual skills of industrial employees in relation to successful job performance. The visual tests included in the Ortho-Rater battery are those that have been found to have the most general validity for purposes relating to industrial personnel. There was little evidence for supposing that these particular tests were the ones most pertinent for predicting scholastic success or for identifying visual handicaps to such success. The Ortho-Rater battery includes twelve visual performance tests as follows:

#### Far Tests (26 feet)

1. Vertical phoria.
2. Lateral phoria.
3. Acuity, both eyes.
4. Acuity, right eye.
5. Acuity, left eye.
6. Depth perception.
7. Color vision.

#### Near Tests (13 inches)

1. Acuity, both eyes.
2. Acuity, right eye.
3. Acuity, left eye.
4. Vertical phoria.
5. Lateral phoria.

The present study is an attempt to explore the relations of vision and school success by the same method that has proved fruitful in industry. Also it is an attempt to evaluate the potentialities of the Ortho-Rater and of the visual fact-finding approach for application to grade school pupils. As the instrument was designed for use with adults, two other problems were presented. One, it was necessary to investigate difficulties of administration of the tests with respect particularly to understanding of directions

were studied together. The pupils in these grades were grouped into five categories according to their achievement on the test. The proportion of the pupils classified in the upper three groups increases progressively with higher scores on this near acuity test. Figure 1 shows this relationship. Among those pupils who scored below 7 on the acuity test, none of them were achieving at a level of average or better. For higher scores on acuity an increasing proportion of the pupils were classified as average or better. For satisfactory achievement a minimum score of 7 would seem to be required on this test and for optimum chances of achievement a score of at least 9.

By such analyses of each of the vision tests in the Ortho-Rater, minimum visual requirements were established on each test for predicting success in school work. Each of these requirements was based upon factual data showing that pupils who do not meet this requirement have less than average chance for successful achievement in reading. The pattern of visual requirements for grades three and four is shown in Figure 2 and the pattern of requirements for grades five and six is shown in Figure 3. The background of each of these patterns is a matrix showing all possible scores on each of the Ortho-Rater tests. The areas that are shaded dark include those scores more characteristic of the pupils who were lowest in achievement. The lighter shaded areas represent those score ranges in which practically no cases fell, and those few not below average in achievement. The minimum visual requirements could be extended through these areas without greatly affecting the selectivity or validity of the requirements.

Several of the shaded areas are based on very few less successful cases and cannot therefore be interpreted strictly or finally as representing undesirable characteristics. In general, the most certain visual requirements involve near acuity, some ability on the color vision test, and near vertical phoria. The other indicated requirements are no more than indications of what might be discovered by further investigations, perhaps with tests better adapted to school use. Somewhere close to the requirements pictured in Figures 2 and 3 will probably be found permanently valid visual correlates of scholastic success.

It is apparent from these profiles that a more severe, restrictive pattern of visual requirements was discoverable in the fifth and sixth grades than in the third and fourth grades. This is shown by the fact that larger areas are shaded in the fifth and sixth grades profile than in the third and fourth grades profile. This may be associated with greater demands for reading and study in the intermediate grades than in the primary grades.

It is quite significant that neither of these patterns of visual requirements includes any minimum standard on far acuity, which is what the traditional Snellen letter chart measures. This particular skill is not important for success in school achievement as measured by this achievement test. Only three pupils in fifth and sixth grades, none in the other grades, scored higher than 12 on far acuity, both eyes; they were not among the better students. This score range is shaded as possibly being undesirable, but so few cases cannot be taken as supporting any contention that superior acuity is associated with a scholastic handicap.

Only one pupil (he among the less successful) scored X on one of the



phoria tests. A score of X indicates inability to use the two eyes together adequately to perform on these tests. In the absence of any children who had only one eye or used only one eye habitually, it is not possible to conclude that they would not have demonstrated at least average success on the achievement test. This may be true in spite of the fact that for the two-eyed children there appeared a minimum near acuity requirement for each eye.

The required performance on the color test may involve primarily other factors than true color sensitivity.

Table 1 shows the distributions of reading achievement scores of fifth and sixth grade pupils who met all the minimum visual requirements and of those who did not meet all the minimum visual requirements. In each grade the majority of the pupils did meet all the requirements. For those who did meet the requirements 17 per cent were in the top group and 23 per cent in the next highest group on paragraph meaning; 6 per cent were in the lowest group and 13 per cent in the next lowest group in achievement. But for those who did not meet the visual requirements in grades five and six only 9 per cent and 13 per cent were in the highest achievement groups while 30 per cent and 21 per cent were in the lowest achievement groups. In summary, of those who did meet the visual requirements, 80 per cent were in the average or better groups on paragraph meaning, while among those who did not meet the visual requirements only 49 per cent were in the average or better achievement groups.

In the lower part of Table 1 a similar relation is shown for achievement on word meaning. Among those who do meet all the visual requirements 89 per cent are in the average or better achievement groups while among those who do not meet all the visual requirements only 59 per cent are in the average or better groups. It is evident from these distributions that those fifth and sixth grade pupils who have the desirable visual skills have a much greater chance of success in terms of standardized reading achievement tests.

Table 2 shows similar distributions of reading achievement for third and fourth grade pupils. Here the selectivity of the test was not as great as in the case of the fifth and sixth grade pupils. On paragraph meaning, among those who met all the visual requirements, 70 per cent were in the average or better achievement groups while among those who did not meet the minimum requirements 65 per cent were in the average or better achievement groups. On word meaning those who met the visual requirements were in the average or better groups in 71 per cent of the cases, while among those who did not meet the visual requirements 68 per cent were in the average or better achievement groups.

Another way of illustrating the difference in achievement of pupils who did and those who did not meet the visual requirements is illustrated in Table 3. For each grade group of pupils, the median achievement score of those not meeting the visual requirements was determined—that level of achievement which was exceeded by 50 per cent of these groups. Table 3 shows the percentages of pupils who do meet the visual requirements who exceeded the median of the visually not qualified groups. With one exception (paragraph meaning in grade four) a larger percentage of the visually qualified group exceeds the median score of the visually not qualified group.

and symbols. Two, very young children might be handicapped by physical limitations of the instrument, such as the distance apart of the two lenses of the instrument, the height and postural requirements of the subject, etc.

### *Procedure*

Ortho-Rater tests were given to all grade school children from the sixth through the second grades in a small city elementary school, and to some pupils also in the first grade. The tests were given in September and October, 1945. Testing was done by a young woman with nursery school training. No variations in testing procedure were necessary from the sixth through the third grades. Testing became exceedingly difficult with the second and first graders, who were reticent and easily distracted. It was not clear in many instances how well they grasped the meaning of directions or the significance of the test objects. Some small pupils had trouble seeing through both lenses at the same time, or were unable to see into the Ortho-Rater without being raised up and seated on books and pillows. However, testing with second graders was carried on by the use of models to illustrate what they were to look for and by modifications of the test questions. The first graders presented the same kinds of problems as did the second graders but with even greater limitations. Almost three times as much time was spent with first graders as was spent with sixth graders in giving the test. Since the records of first graders and probably also of the second graders were of questionable validity, those results have been excluded from the present study.

In the spring of the previous school year these children had been given the Stanford Achievement Test. The following scores were used as a criterion of achievement: paragraph meaning, word meaning, spelling, and the total test score. The children in each grade were grouped according to their scores on this test. The visual traits of those scoring highest, as contrasted with those scoring lowest on the test, were established as minimum visual requirements for successful achievement. Since "paragraph meaning" and "word meaning" were considered most in this study, this criterion of success is essentially a measure of reading achievement.

The visual requirements discovered for fifth and sixth grade pupils were more severe than those for third and fourth grade pupils. Also the fifth and sixth graders had used a different form of the Stanford test. Therefore, for practical purposes the fifth and sixth grade students have been grouped together and the third and fourth grade students grouped together in this study. As the visual testing of these children took place fairly early in the school year, in a sense the skills measured had been developed in the preceding school year. Also the criterion measure had been taken from the previous school year. Therefore, the results on fifth and sixth grade pupils might be considered to represent fourth, fifth, and sixth grades, or the intermediate grades. Likewise the results on third and fourth grade pupils might be considered as representing second and third grades or the primary years.

### *Results*

One of the most discriminating vision tests is near acuity. In a preliminary study of the data, three intermediate grades, four, five and six,

### Conclusions

1. By means of an analytical approach, making no *a priori* assumption as to what constitutes good vision for school work, it is possible to discover certain visual skills that are important for school achievement.

2. The visual requirements discoverable for intermediate grades in this study were more severe, more critical, and more selective than those for the primary grades.

3. The most probable visual requirements revealed by these tests involve near acuity, color test, and near vertical phoria posture.

4. Poor distance visual acuity, as traditionally measured with the Snellen test chart, was not a factor in achievement in any of these school grades.

5. The Ortho-Rater, designed for use with adults, is not physically adapted to testing very young children. It is reasonable to expect that developmental research would be required to adapt the instrument, tests, and testing procedure for school children, just as it was required to develop the present Ortho-Rater for adult vision tests in industry.

6. The results of the present study do not preclude the possibility that other tests of visual skills, not included in this battery, may be just as critical or more critical than some of those that are included. Developmental research will be necessary to establish the optimum battery of vision tests for predicting school success and for identifying pertinent visual handicaps.

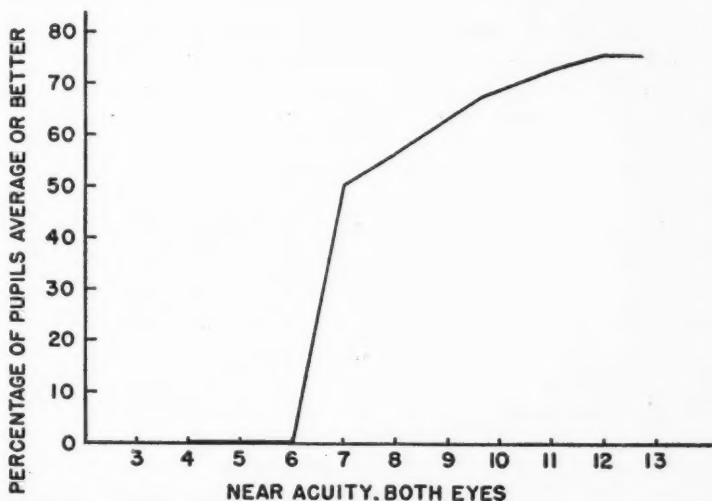


Figure 1. Achievement in intermediate grades in relation to near visual acuity.

TABLE I

Distributions of reading achievement of fifth and sixth grade pupils who pass or fail minimum requirements in visual skills.

Achievement Test Score	Grade 5		Grade 6		Grades 5 and 6			
	Pass	Fail	Pass	Fail	Pass		Fail	
	N	N	N	N	N	%	N	%
Paragraph Meaning								
66	4	2	8	3	12	17%	5	9%
61 - 65	7	0	9	7	16	23%	7	13%
49 - 60	11	6	17	9	28	40%	15	27%
40 - 48	8	12	1	5	9	13%	17	30%
- 39	3	6	2	6	5	6%	12	21%
Total	33	26	37	30	70	99%	56	100%
Word Meaning								
68	3	0	7	4	10	14%	4	7%
61 - 67	12	2	13	5	25	36%	7	13%
47 - 60	12	8	15	14	27	39%	22	39%
37 - 46	5	11	1	3	6	9%	14	25%
- 37	1	5	1	4	2	3%	9	16%
Total	33	26	37	30	70	101%	56	100%

TABLE II

Distributions of reading achievement of third and fourth grade pupils who pass or fail minimum requirements in visual skills.

Achievement Test Score	Grade 3		Grade 4		Grades 3 and 4			
	Pass	Fail	Pass	Fail	Pass		Fail	
	N	N	N	N	N	%	N	%
Paragraph Meaning								
47	0	0	9	5	9	10%	5	15%
35 - 46	6	0	14	5	20	23%	5	15%
25 - 34	17	4	15	8	32	37%	12	35%
13 - 24	14	6	3	1	17	20%	7	21%
- 12	7	4	2	1	9	10%	5	15%
Total	44	14	43	20	87	100%	34	101%
Word Meaning								
47	3	0	10	5	13	15%	5	14%
37 - 46	6	0	14	5	20	23%	5	14%
23 - 36	16	5	13	9	29	33%	14	40%
15 - 22	12	5	4	1	16	18%	6	17%
- 14	7	4	2	1	9	10%	5	14%
Total	44	14	43	21	87	99%	35	99%

TABLE III

Percentages of visually qualified elementary pupils exceeding the median reading achievement of visually unqualified pupils.

	Paragraph Meaning		Word Meaning	
	Median	Percentage	Median	Percentage
Grade 3	15	70	21	61
Grade 4	36	48	34	66
Grades 3 and 4	27	65	28	55
Grade 5	46	77	57	84
Grade 6	53	62	46	70
Grades 5 and 6	48	81	51	79

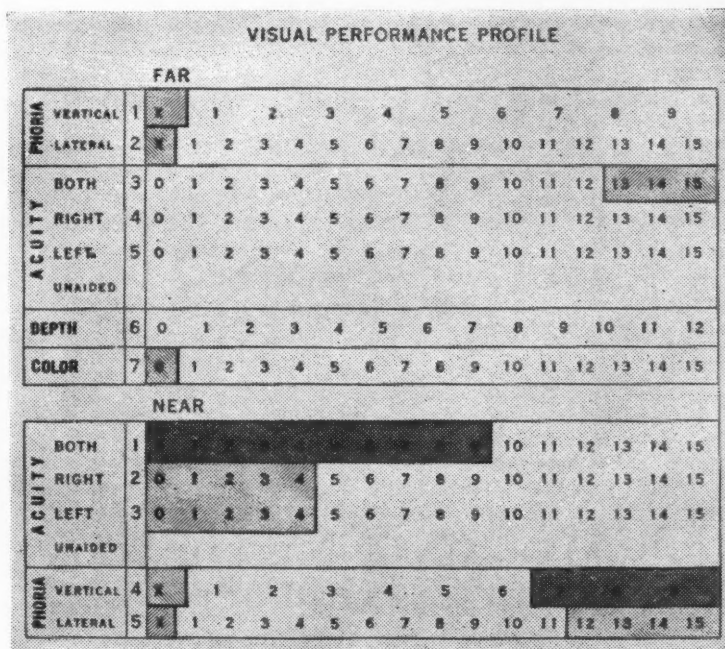


Figure 2. Pattern of visual skills related to achievement of third and fourth grade pupils.

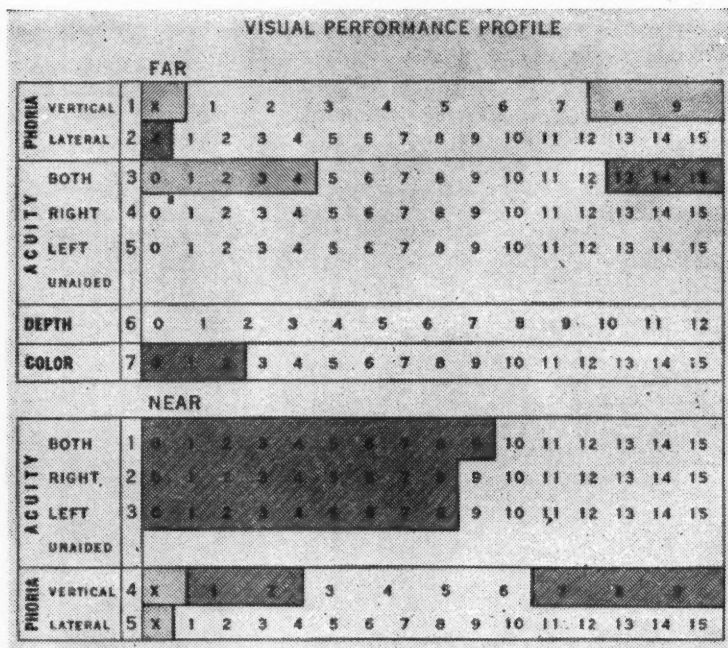


Figure 3. Pattern of visual skills related to achievement of fifth and sixth grade pupils.

## VISUAL ANALYSIS INVESTIGATION AS PART OF A READING PROGRAM

*George T. Krous, Ph.D., Principal  
John Burroughs School, Fresno, California*

Vision is a most important medium for the achievement of learning. The abuses of the visual process in the American Public School System are appalling to contemplate. The indifferences of parents and educators and the evident lack of knowledge concerning the conditions of the vision of

school children is a serious reflection upon our educational program. In the school where the project being reported was conducted a specialist in vision was brought in each year to discuss before parents and teachers the vision of school children, its care and protection.

In 1944 Mrs. Alice Drehmel was assigned to teach a class of retarded pupils. On the occasion of the annual vision lecture she requested a special vision analysis and service for her pupils. Through her initiative, interest and active participation the development of the project was greatly aided. In response to her request a local optometrist agreed to render a visual analysis service for the remedial class. The results of that service were so helpful that it was decided to continue on a larger scale during the school year 1945-46.

A brief report of the visual analysis investigation as conducted follows: The following notice announcing the vision analysis investigation and requesting parental permission for the examination of each child was sent out through the school.

#### VISUAL TESTING

John Burroughs Elementary School is carrying on a visual testing program with permission of the school administration under the supervision of local optometrists. This is a screening test carried on to evaluate the conditions of children's seeing skills. The skills to be tested are as follows:

1. The monocular and binocular visual acuity, taken while both eyes are open.
2. The quality of fusion, or ability to blend what is seen with each eye into one picture, tested at both distance and near points.
3. The phorias, or posture each eye tends to take, tested at distance and near.
4. The percentage of stereopsis or depth of perception.
5. The hand-eye coordination.

We are anxious to get this visual information on the entire student body if possible for survey purposes. A report of this screening test will be furnished to the parents of each child tested. In order to make this test we must have the permission of the parents of each child. Below is a form for making this request. We hope that every child will return the following form signed by his parents.

#### SCREENING TEST FOR VISUAL SKILLS

I request that my child \_\_\_\_\_ be given the privilege of having the Screening Test of Visual Skills conducted under the supervision of the John Burroughs School.

Signature \_\_\_\_\_

As evidence of the desire for this type of service on the part of parents, requests for vision examinations were received for practically every child in the school. However, with the limited professional services available it



was impossible to provide examinations for all the cases requested. We decided to continue administering examinations to all retarded pupils and to test those pupils who gave evidence of possible visual difficulties. Dr. Herbert L. Kent and Dr. Herbert Kallman, optometrists, served without fee to assist with the conducting of this investigation. During the school year two hundred thirty-one pupils were given the screening examination.

The following form was used to report the results of the screening tests:

### JOHN BURROUGHS SCHOOL RESULTS OF TESTING OF VISUAL SKILLS

\_\_\_\_\_ has been given a test to evaluate certain visual skills. The score on these skills (does does not) show definite visual trouble. As this is a limited test, a complete professional examination might disclose visual troubles even if none have shown up in this test.

	GOOD	FAIR	POOR
Fusion—The ability to combine what is seen by each eye into a single picture.			
At near	___	___	___
At far	___	___	___
Stereopsis—The ability to judge the distance, form and shape of objects.	___	___	___
Visual efficiency—The ability to recognize form and shape of objects.			
At near	___	___	___
At far	___	___	___
Suppression—The improper habit of blocking out the vision of either eye at times.			
Left eye	___	___	___
Right eye	___	___	___
Phoria—The alignment of the eyes.			
At near	___	___	___
At far	___	___	___

After having eyes further examined by an Ophthalmologist or Optometrist we would appreciate a report of such examination by the examining doctor.

In practically every instance where the report showed that definite visual trouble did exist, parents indicated an interest and concern for further service. They often inquired concerning the availability of further visual service and for recommendations regarding to whom to go. In no case was personal recommendation for professional service given. Parents were advised to seek the services of any reliable practitioner available. Approximately one-half hour was spent on the examination of each pupil. In addition considerable time was given to recording the record of each pupil. Of the two hundred thirty-one pupils examined, one hundred seventy-seven or approximately seventy-seven per cent showed visual trouble. This is a seemingly high per cent and probably isn't indicative of visual conditions

of pupils generally. In this case we were trying to select the most evident instances of visual difficulty.

Table I reports a summarization of the ratings of visual skills of one hundred seven boys and seventy girls. These pupils are the ones judged as having definite visual trouble.

TABLE I

Percentage of ratings, good, fair, poor given to 177 pupils judged as having evidence of visual difficulty.

	GOOD	FAIR	POOR
Fusion—The ability to combine what is seen by each eye into a single picture.			
At near	9.5%	25.8%	64.7%
At far	14.5	29.2	56.4
Stereopsis—The ability to judge the distance, form and shape of objects.	1.8	38.6	63.6
Visual efficiency—The ability to recognize form and shape of objects.			
Right eye	67.4	16.6	16.0
Left eye	69.1	13.1	17.8
Both eyes	78.6	10.7	10.7
Suppression—The improper habit of blocking out the vision of either eye at times.			
Right eye	5.1	29.5	65.4
Left eye	2.8	30.7	66.5
Phoria—The alignment of the eyes.			
At near	9.1	52.9	38.0
At far	25.6	55.4	19.0

Table II reports similar data concerning some fifty-four pupils judged as not having visual trouble.

TABLE II

Percentage of ratings, good, fair, poor, given to 54 pupils judged as not showing evidence of visual difficulty.

	GOOD	FAIR	POOR
Fusion—(see description Table I)			
At near	26.4%	52.8%	20.8%
At far	28.6	46.4	25.0
Stereopsis—	3.8	52.8	43.4
Visual efficiency—			
Left eye	79.6	18.5	1.9
Right eye	81.1	17.0	1.9
Both eyes	88.2	8.8	3.0
Suppression—			
Left eye	10.9	63.6	25.5
Right eye	11.3	64.2	24.5
Phoria—			
At near	12.5	75.0	12.5
At far	35.2	64.8	0.0

The measure of general "visual efficiency" is similar to the measure offered by the Snellen Chart. It will be noted that both the data shown in Table I and that reported in Table II indicate that the pupils generally rate very high in this function. The evidence strongly indicates that the more detailed and analytical functions of vision, such as fusion, stereopsis, suppression, and phoria are the more fundamental and basic functions of vision. They should be measured and analyzed in any study of the vision of school children. Consequently, the use of the Snellen Chart as the sole measure of vision is likely to be very limited and misleading.

Table III we believe to be very significant. It reports data regarding fourteen pupils, eleven boys and three girls, whose intelligence quotients and reading grade placements were secured in 1944 and who have had visual service over the following two-year period.

TABLE III

0	1	2	3	4	5	6	7
	1944	1944	1946	CHG.	1944	1946	
PUPIL	AGE	I.Q.	I.Q.	I.Q.	READ- GRADE	READ- GRADE	CHG.
1	12-10	80	90	10	4.2	6.2	2.0
2	12-9	72	97	25	3.5	5.9	2.4
3	12-7	90	97	7	3.5	6.3	2.8
4	12-5	78	95	17	3.4	5.5	1.1
5	12-7	75	93	18	4.0	5.8	1.8
6	13-2	73	72	-1	3.4	5.5	2.1
7	13-4	71	84	13	3.0	5.0	2.0
8	13-1	73	84	11	3.4	5.1	2.1
9	12-7	67	82	15	2.5	4.8	2.3
10	12-9	73	85	12	3.2	4.7	1.5
11	13-4	70	74	4	2.0	4.0	2
12	13-1	67	72	5	3.2	3.7	0.5
13	13-4	73	71	-2	3.2	4.4	1.4
14	11-7	90	96	6	2.5	5.8	3.3
Mean		75	85	10	3.3	5.2	1.9

Columns 5 and 6 of Table III show the reading grades of these pupils in 1944 and 1946 respectively. The average reading grade in 1944 was 3.3. In 1946 it was 5.2. Over the two year period between 1944 and 1946 when visual aid was received, an average grade achievement of 1.9 grades for the two year period was reached or an average of .95 grade gain for each year. This is almost normal achievement for normal intelligence. For intelligence of an average of 85 I.Q. shown by column 3 of this table, the achievement is high. Perhaps the over-ageness of these pupils for the sixth grade level of work also contributed to the degree of achievement.

Column 4 of Table III shows the change in I.Q. score over this two year period of time. An average of 10 points increase in I.Q. score was shown for the entire fourteen pupils. This is a strong gain in I.Q. score over a two year period of time and one probable explanation of this measured increase in

I.Q. score is that pupils were relatively better able to read the group tests used, and consequently made a higher and more accurate I.Q. score at the end of the two year period of visual analysis and service.

The over-ages of the pupils in 1944 was an average of .9 of a year as fourth graders. An average of 3.3 grades during a 4.9 year period of time gives an average achievement of .67 grade per year. There is therefore an average increase of .28 grade achievement per year during the 1944-46 period over the previous entire school period which may be attributed in part to visual service and teacher influence and techniques used.

On the basis of time and expense involved this increase of .28 grade achievement per year could be interpreted as being equivalent to \$28.00 saving on the basis of a school expenditure of \$100.00 per year per pupil.

This strongly substantiates the point of view that any educational or social services which are provided to schools or society, and show definite measurable beneficial results or economies, are good economic investments.

In this experiment during the past year, when two hundred and thirty-one pupils were examined, many individual cases were discovered where the visual needs were so extreme as to attract the interest and attention of teacher, parent and visual authorities. Some of these cases, after visual service was provided, made phenomenal improvement in educational achievement, change in social attitudes and personality.

The greater the natural ability of the pupil, the more outstanding is his observable improvement in achievement when his visual difficulties are corrected.

An accumulation of data on pupils starting during the year 1945-46 is being developed for future study. There are considerable case study data available on individual cases, which is not included in this brief report.

The techniques utilized by teachers, and their sympathetic understanding of visual problem cases contribute to the improvement and achievement of these deserving pupils. Attention to sufficient light, type of print, frequent relaxation periods, much board work in large size writing, stimulation of the pupil to achieve to his maximum without discouragement or irritation because of his visual difficulties, are given more consideration in John Burroughs School because of the emphasis given to vision by this project.

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## NORMAL EYES FOR READING

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Instructor Physiological Optics,  
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Numerous physical and mental qualities have an influence upon the child's reading skill. It cannot be said that any one of these is the main cause of reading problems. In most cases it may be a combination of factors which retards reading development. Whether the basic causes be physical disabilities,

physiological disorders, or psychological maladjustments, the fact remains that reading is primarily dependent upon the use of the eyes. Visual efficiency is necessary regardless of other organismic conditions.

Normal eyes are a prerequisite to adequate reading performance. The eyes must be healthy and able to function properly if reading is to be accomplished. What then are normal eyes for reading? This conference is concerned with a specific visual task, and what is normal for reading may or may not be normal for some different visual task. Reading is done at near point, and it is the failure to realize that the visual demands at this point are not the same as the demands of far point seeing, which has led to misunderstanding concerning the role of vision in reading problems.

The first studies of the eye concerned its physical characteristics. The emphasis was on distance seeing, and the first lenses were used to improve the sharpness of vision. There were no means available to investigate more than structural characteristics, the functional aspects of seeing were beyond the scope of knowledge and instrumentation of the time. The result was that the classification of normal eyes was based upon the ability to see clearly at distance. Clear vision is still important, especially for certain types of work, but it is not the only requirement for near point seeing.

The influence of this early approach to vision is still evident, particularly in the public conception of visual problems. Most people assume that as long as they can see clearly, there is nothing wrong with their eyes. It is obvious that the eyes must be free from disease and gross anatomical defects if they are to function properly. On this basis, most eyes are normal. However, the presence of normal structure does not guarantee smooth function. Neurological development, control in central nervous system, learning, and experience all play a part in determining how well the structure may be utilized.

Classical usage of the term "eye defects" is largely based upon far point seeing. The designation of visual problems at near point has been slow to develop. "Eye defects" generally means nearsightedness, astigmatism, or more than expected farsightedness, all of which in certain degrees produce blurred vision. In addition, crossed-eyes and muscular imbalances may be included as eye defects, but these also fall into the category of structural abnormalities. All of these anomalies are compared with a standard set up for far point seeing, and are defects in terms of physical characteristics and in terms of clear vision.

It has been the experience of many teachers to find the report of a retarded reader shows no visual defects are present. The report is correct, if it is meant the child has proper ocular structure and clear vision at optical infinity. Can it be assumed that his eyes are normal for reading? The use of the term "normal for distance seeing" can be applied with validity to reading only if it is true that what is abnormal for distance seeing is also a hindrance for reading. The term must be consistent or it has no value. The visual measure must detect those inefficient in both environments, there should be correlation between poor achievement in reading and failure to pass the visual tests. The original question then can be stated in another way, is it true that a child who does *not* have normal eyes for far point seeing is handicapped for reading? The reliability of the visual standard can be examined in this manner.

The above reasoning leads to two conclusions: First, there should be many nearsighted children, cross-eyes cases, or those with which such eye defects, among the poor readers. Second, there should be few children manifesting these visual defects who are good readers and superior students. These facts must be true or the criterion of visual efficiency, namely far point seeing, is in error as a basis for determining normal eyes for reading.

The experienced teacher need not be told that numerous studies have shown that students with eye defects as defined are seldom retarded readers, and are usually good students. The reading problem cases generally do not manifest any of these visual difficulties. In fact positive correlation has been demonstrated between poor distance vision and scholastic ability. There is evidence that far point visual defects do not interfere with school work. It should be understood that this discussion is not including the sub-normal vision cases, that is partial blindness which cannot be corrected with glasses. The type of cases being considered are those in which visual acuity can be improved by application of the proper lenses.

Several explanations are given as to why the nearsighted child for example, though the same may be true of the other cases, becomes a good reader. It is said that the child has ruined his eyes *by* reading. However, it does not prove he has ruined his eyes *for* reading, nor does it show the absence of the defect is an advantage. The statement does not demonstrate the validity of far point seeing standards for reading. Another frequently given explanation is that the nearsighted child has blurred vision and since it is necessary to wear glasses, the child cannot take part in outdoor activities and seeks refuge in reading. If this is true, the conclusion must be that the child becomes a good reader because he does a great deal of it. If practice makes the nearsighted child an efficient reader, why does it fail with a child without glasses who is intelligent and has good motivation? Still further, the explanation does not show the eye defect is abnormal for reading.

A third reason offered for the absence of the nearsighted child in the remedial reading class is that the defect was discovered and corrected. The implication is that once defective vision is corrected by lenses the child will not become a reading problem. The fault in this thinking lies in the fact that while the lenses are worn the child has normal far point vision; yet, most of the children needing special reading instruction have the same normal vision without glasses. Certainly it is not better to have had poor vision corrected by glasses than to have always had good vision. None of the theories prove that the child who does not have normal eyes for far point seeing is handicapped in school. Some other standard then must be used to determine normal eyes for reading.

The inconsistency of the observable facts with the traditional method of defining visual defects has led many to believe that vision is of minor importance in reading problems. Such a conclusion is logical when the evidence is that eye defects of distance vision do not interfere with reading achievements. In fact, the presence of them might even be shown to be an advantage if it is true that the nearsighted, the children wearing glasses are usually good students, seldom poor readers. The point should be emphasized that tests of far point seeing may fail those who are visually efficient at near point, and pass the children who are inefficient.

Reading is a task which is carried out at a point about sixteen inches

from the eyes. The muscle posture and innervational control required for near point seeing is entirely different from that used in distance seeing. Reading demands adequate adjustments between the focusing mechanisms of each eye and the coordination of the two eyes together, a high order of fusional and fixational ability is essential. The teacher is concerned primarily with identification and comprehension of material in a restricted visual environment. The specification of normal eyes for reading must be made in terms of visual efficiency in this environment.

A visual analysis to determine the functional ability of the eyes is based fundamentally upon measurements taken while the eyes are engaged in the act of seeing at near point. A part of this examination is known as the visual skills tests, the rest of such a visual analysis is more technical and need not be considered in this discussion. Norms for the visual skills tests are established upon the performance of individuals who are known to be efficient on the job or in school. Deficiencies in these skills are frequently found in poor readers, while the skills are usually normal in good readers. The standards have been determined from numerous surveys in schools, in industry, and from years of clinical experience.

A complete battery of visual skills includes some twenty tests. Such things as motility of the eyes, the degree of fusion, the span of recognition, depth perception, hand and eye co-ordination, suppression or blocking out of one eye, and the facility of adjusting the focusing and the fixating mechanisms are investigated. These are the skills which are necessary if a child is to be efficient at a near point task. The manifestation of these visual difficulties may take one of three pathways: First, the child may have ocular discomfort on use of his eyes. Second, he may accomplish the required closework but only by extra effort, a slow reader but keeping up in school by hard work. Third, the difficult task is avoided; since the eyes hurt, or achievement will be very low, the child may become a retarded reader.

The child learns to see, he must learn the proper visual skills for reading, he is not born with them. The development of visual skills may be influenced by some of the factors which are considered to be causes of reading problems. There are numerous elements which play a part in the maturation of ocular behavior patterns. The elimination of the basic cause of poor visual skills does not always result in their improvement. Vision as a secondary cause may retard reading. It is not the only cause, and it may not be the primary cause; however, increased reading achievement is more likely to develop in a child with an efficient visual mechanism than in a child who must overcome this added burden.

Poor visual functioning offers an explanation to the fact that a retarded reader may have normal eyes in terms of distance seeing, yet have difficulty reading. It can also account for the child with poor distance vision who is capable at closework. Normal eyes for reading should be defined in terms of the ability to carry out the task of seeing and interpreting at the reading distance for extended periods of time without ocular discomfort. The degree of visual efficiency can be determined by the visual skill tests. Only on the basis of such tests can it be said with certainty that a child has normal eyes for reading.

It should be added that functional difficulties can be improved in many cases by vision training. The child may learn adequate visual skills with



clinical instruction and instrumentation. Vision training, however, is *not* teaching a child to read, it is increasing the efficiency of the visual mechanism, higher reading performance may follow.

#### SUMMARY

1. A distinction is made between the visual requirements for reading and the use of the eyes for distance seeing.
2. The validity of far point tests of vision as a measure of visual capabilities for school work is questioned.
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5. A complete visual analysis, including the visual skill tests, should be made of every child who reads at a level below his potential capacity.

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## THE FUNCTION OF ORTHOPTICS IN READING DISABILITIES

*Julia E. Lancaster, M.A.*

*San Francisco Ophthalmic Laboratory*

The act of vision is a highly complicated process, involving the focusing and receiving mechanism of the eyeball, the muscles controlling the position of the eyes, the nerve impulses directing the act, and the interpretive function of the brain, and, ultimately, the philosophy of the orientation of the individual in space. This elaborate process can be conveniently divided into two major aspects: the eye as an eye, and the two eyes in relationship to each other. The eye as an eye, and any defects thereof, are strictly the province of the ophthalmologist. It is his function to recognize and treat any pathological conditions which make the eye defective. It is also the eye as an eye which is treated by fitting glasses. Myopia (nearsightedness), hypermetropia (farsightedness) and astigmatism (irregularities in the eyeball) are all correctable by properly prescribed glasses. Since they are all due to the shape of the eyeball they are not correctable in any other way, any more than the shape of the ear or thumb can be changed by manipulation or exercises, nor by wishful thinking. If a disability in reading is due to the eye itself, one or both, it should be referred to a doctor for treatment.

The second field of visual problems, the eyes in relationship to each

physiological disorders, or psychological maladjustments, the fact remains that reading is primarily dependent upon the use of the eyes. Visual efficiency is necessary regardless of other organismic conditions.

Normal eyes are a prerequisite to adequate reading performance. The eyes must be healthy and able to function properly if reading is to be accomplished. What then are normal eyes for reading? This conference is concerned with a specific visual task, and what is normal for reading may or may not be normal for some different visual task. Reading is done at near point, and it is the failure to realize that the visual demands at this point are not the same as the demands of far point seeing, which has led to misunderstanding concerning the role of vision in reading problems.

The first studies of the eye concerned its physical characteristics. The emphasis was on distance seeing, and the first lenses were used to improve the sharpness of vision. There were no means available to investigate more than structural characteristics, the functional aspects of seeing were beyond the scope of knowledge and instrumentation of the time. The result was that the classification of normal eyes was based upon the ability to see clearly at distance. Clear vision is still important, especially for certain types of work, but it is not the only requirement for near point seeing.

The influence of this early approach to vision is still evident, particularly in the public conception of visual problems. Most people assume that as long as they can see clearly, there is nothing wrong with their eyes. It is obvious that the eyes must be free from disease and gross anatomical defects if they are to function properly. On this basis, most eyes are normal. However, the presence of normal structure does not guarantee smooth function. Neurological development, control in central nervous system, learning, and experience all play a part in determining how well the structure may be utilized.

Classical usage of the term "eye defects" is largely based upon far point seeing. The designation of visual problems at near point has been slow to develop. "Eye defects" generally means nearsightedness, astigmatism, or more than expected farsightedness, all of which in certain degrees produce blurred vision. In addition, crossed-eyes and muscular imbalances may be included as eye defects, but these also fall into the category of structural abnormalities. All of these anomalies are compared with a standard set up for far point seeing, and are defects in terms of physical characteristics and in terms of clear vision.

It has been the experience of many teachers to find the report of a retarded reader shows no visual defects are present. The report is correct, if it is meant the child has proper ocular structure and clear vision at optical infinity. Can it be assumed that his eyes are normal for reading? The use of the term "normal for distance seeing" can be applied with validity to reading only if it is true that what is abnormal for distance seeing is also a hindrance for reading. The term must be consistent or it has no value. The visual measure must detect those inefficient in both environments, there should be correlation between poor achievement in reading and failure to pass the visual tests. The original question then can be stated in another way, is it true that a child who does *not* have normal eyes for far point seeing is handicapped for reading? The reliability of the visual standard can be examined in this manner.

The above reasoning leads to two conclusions: First, there should be many nearsighted children, cross-eyes cases, or those with which such eye defects, among the poor readers. Second, there should be few children manifesting these visual defects who are good readers and superior students. These facts must be true or the criterion of visual efficiency, namely far point seeing, is in error as a basis for determining normal eyes for reading.

The experienced teacher need not be told that numerous studies have shown that students with eye defects as defined are seldom retarded readers, and are usually good students. The reading problem cases generally do not manifest any of these visual difficulties. In fact positive correlation has been demonstrated between poor distance vision and scholastic ability. There is evidence that far point visual defects do not interfere with school work. It should be understood that this discussion is not including the sub-normal vision cases, that is partial blindness which cannot be corrected with glasses. The type of cases being considered are those in which visual acuity can be improved by application of the proper lenses.

Several explanations are given as to why the nearsighted child for example, though the same may be true of the other cases, becomes a good reader. It is said that the child has ruined his eyes *by* reading. However, it does not prove he has ruined his eyes *for* reading, nor does it show the absence of the defect is an advantage. The statement does not demonstrate the validity of far point seeing standards for reading. Another frequently given explanation is that the nearsighted child has blurred vision and since it is necessary to wear glasses, the child cannot take part in outdoor activities and seeks refuge in reading. If this is true, the conclusion must be that the child becomes a good reader because he does a great deal of it. If practice makes the nearsighted child an efficient reader, why does it fail with a child without glasses who is intelligent and has good motivation? Still further, the explanation does not show the eye defect is abnormal for reading.

A third reason offered for the absence of the nearsighted child in the remedial reading class is that the defect was discovered and corrected. The implication is that once defective vision is corrected by lenses the child will not become a reading problem. The fault in this thinking lies in the fact that while the lenses are worn the child has normal far point vision; yet, most of the children needing special reading instruction have the same normal vision without glasses. Certainly it is not better to have had poor vision corrected by glasses than to have always had good vision. None of the theories prove that the child who does not have normal eyes for far point seeing is handicapped in school. Some other standard then must be used to determine normal eyes for reading.

The inconsistency of the observable facts with the traditional method of defining visual defects has led many to believe that vision is of minor importance in reading problems. Such a conclusion is logical when the evidence is that eye defects of distance vision do not interfere with reading achievements. In fact, the presence of them might even be shown to be an advantage if it is true that the nearsighted, the children wearing glasses are usually good students, seldom poor readers. The point should be emphasized that tests of far point seeing may fail those who are visually efficient at near point, and pass the children who are inefficient.

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from the eyes. The muscle posture and innervational control required for near point seeing is entirely different from that used in distance seeing. Reading demands adequate adjustments between the focusing mechanisms of each eye and the coordination of the two eyes together, a high order of fusional and fixational ability is essential. The teacher is concerned primarily with identification and comprehension of material in a restricted visual environment. The specification of normal eyes for reading must be made in terms of visual efficiency in this environment.

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The second field of visual problems, the eyes in relationship to each

other, offers a very special area for research and treatment and is an interesting and important source of reading disabilities, not so clearly marked as medical in character, but bordering on the field of education. The diagnosis of such problems, and their separation from strictly medical treatment, should be undertaken only by the ophthalmologist. They are not usually clearly separated from pathological problems, or refractive errors (correction by glasses). Once a diagnosis of imbalance in binocular relationship has been made, it is the function of orthoptics to develop the best possible visual skill in the use of the two eyes together—to teach the patient to make the best use of the kind of eyes he has. If his disability is such that the eyes are not a reasonably balanced pair—if the vision in one eye is much worse than in the other, they never can function as good teammates. But if each eye (corrected if indicated, by glasses) is a good eye, much can be accomplished in developing normal functioning as a pair.

There are four, and only four, ways the two eyes can adjust to binocular vision. The normal way is by fusion of the images received by the two eyes into a single image. To do this the eyes must be able to turn and fix on the same object; i. e., there must not be any manifest deviation in the eyes such as strabismus. If the eyes do not turn and fix on the same object two different images are received which cannot be fused and the sensation of double vision or diplopia results. This is innately distressing. This form of binocular vision is so intolerable that the patient overcomes it if he possibly can. He usually resorts to the third kind of binocular vision, which is suppression of one of the images. The interpretive level of the brain refuses to accept the second image and the patient acts as if he were blind in one eye. Such suppression may be whole or partial; it may be constant or fleeting. It may also be normal or abnormal. Normal suppression occurs for everyone part of the time. We are accustomed to the suppression of distracting elements in our visual field. We give our attention to factors in which we are interested at the moment and other visual stimuli are suppressed. A good example of this is reading matter in the advertising section of magazines—the advertising matter on the marginal areas is more or less successfully suppressed, according to our interest and attention on the material we are reading. Another example is a worker who has a distracting light or window close to him. He learns to suppress this light and concentrate on his field of work. If the location of the light is changed he finds it quite distressing until he has learned to suppress the new area. The gradations from this normal suppression to what can be diagnosed as abnormal are very slight. It may be a cause of reading disability.

The fourth kind of adjustment to binocular vision is by developing anomalous correspondence. This is a very special condition, and as I have never found it to be associated with reading disability a discussion of it is out of place in this paper.

Patients who are well established in the habit of using only one eye (the same eye) at all times have no more difficulty with reading skill than normal pupils with good fusion. The patients who have reading disabilities are those who have diplopia, or who have not adjusted to fixing steadily with a preferred eye (completely suppressing the other eye) but are alternating between the two eyes. These are the problems I propose to discuss. Patients



who are well adjusted to using one eye are the tropias or squints—the cross-eyed children, many of whom are at the top of the class in reading. They are apt to like reading and handwork. They do not have stereopsis or depth perception and hence are often handicapped for games and sports.

The group of patients suffering from diplopia are mostly beyond the help of orthoptic or teaching skill. Diplopia is innately distressing. It is so intolerable that if it is at all possible the patient finds his own solution—by learning fusion, suppression, or anomalous correspondence. Children very rarely manifest it for long. They frequently have brief periods of diplopia, especially when they begin to develop crossed eyes, or following an operation for that condition. They also find out that it draws attention to themselves to claim to have diplopia and will sometimes use it as a device to be excused from work. There is no reliable method for a teacher or layman to find out whether a child really has diplopia or not. A general attitude of indifference to the situation is the indicated treatment. He should not be given undue attention. This will help him find his own solution. Children are rarely much annoyed by diplopia. They do not feel at all the way adults do when suddenly experiencing diplopia. Adult diplopia may be a very serious and distressing condition. Adults seldom learn to suppress or to develop anomalous correspondence, and sometimes they can get reading comfort only by covering one eye and thus shutting out the second image.

Most reading problems that are traceable to failure of binocular skill can be classified as due to suppression. If you look steadily at a small object across the room, and cover first one eye and then the other, you will notice that the object seems to jump a little, from side to side, as you change eyes. This is the phenomenon of parallax and is due to the position of the two eyes side by side in the head. It is this jumping sensation which causes reading disability. A reader who alternates loses his place in the text and has to concentrate with great care to keep his place from word to word and from one line to the next. This slows his reading to such an extent that reading becomes tedious and irritating. It requires so much concentration that it is also fatiguing. The patient develops an aversion to reading. He falls behind his class in reading, is unable to read material advanced enough for his age interest and a vicious circle of dislike, lack of practice, and disability is rapidly developed.

The amount and direction of the "jump" depend upon the amount and direction in which the eye deviates. It should be understood that (except for extreme cases of paralysis or other definitely pathological conditions beyond the scope of this paper) one eye is always straight or fixing and the other eye deviates in relation to the fixing eye. It is the deviating eye that is suppressed and alternates may alternate, and hence alternately suppress, in very rapid cycles—several times in a second in extreme cases, often several times within a minute.

If the deviation is always manifest it is called a tropia. If it is kept under control and no angle is manifest it is called a phoria. If the eye turns out the prefix "exo" describes the condition, if it turns in the term is "eso," while for vertical deviations the prefix is "hyper." (There are also "hypos" and "cyclos," too technical for our consideration.) Thus we have exotropias and exophorias, esotropias and esophorias, and so on.



Both the amount and direction of the angle (and hence of the "jump" in alternation) may vary at different times, and especially when looking at different distances. A common type is the patient who has esophoria for distance and exophoria for near. The vertical or hyper usually exists in conjunction with a lateral deviation. A moment's thought makes it clear what a problem of adjustment a child has when trying to follow a page of print under such conditions!

The correction of the problem is theoretically simple: it consists of (a) breaking down suppression so that the patient has diplopia when his eye deviates, and then (b) developing his skill in controlling his eye movements so that he overcomes his diplopia by fusion instead of by suppression. So-called "eye exercises" when intelligently directed are concerned with these two factors. Unfortunately a large number of charlatans or ignorant persons give "eye exercises" that are not designed to correct these errors at all. Some of the commonest errors are to keep the patient making eye movements which have no bearing on fusion control, and the failure to pay attention to the breaking down of suppression.

Eye movements are of two kinds: the motility of the single eye in moving freely from side to side, up and down, and rotating, and also the coordinated movements of the eyes in relation to each other. The first group of movements is properly called ductions: abduction, away from the nose, adduction, toward the nose, etc. The second group of movements are the vergences: convergence and divergence, being the most important. Without the mobility necessary to make ductions the movements of vergence cannot be performed, but freedom of duction movements in no way guarantees that a patient can perform vergences. The innervation for the two sets of movements is different. Hence the practice of moving the eyes around, following lights or objects may be performed indefinitely with no increase in the patient's binocular skill. To learn vergence skill it is necessary to practice vergences, not ductions.

Many people have a low degree of vergence skill. Sometimes if this skill is improved they no longer find a need to suppress. Suppression ceases and their fusion problem is solved. More frequently, even after they no longer need suppression, the old habit continues and suppression must be broken down as a separate task.

Thus it is that reading problems that can be diagnosed as due to orthoptic causes are found in most cases to be due to suppression, more especially to alternate suppression with its consequent "jump" of the print.

In some cases suppression, being a function of the receptive area of the brain, exists without any detectable movement of the eyes. We need much more research and study in learning how to detect and help such patients. All this field of study of suppression is comparatively new.

The correction of reading disabilities due to suppression follows the same learning process as the acquisition of any other neuro-muscular skill, with the additional problem of getting the patient to *inhibit* his old faulty solution of his problem (suppression), as well as to accept the new correct method (fusion).

Attention, recognition, response and repetition are the steps in the learning process.

Attention is the problem of any teacher in trying to arouse interest in

work assigned to a pupil. We know that it is not enough to *expose* a child to a situation—he must give it his attention if learning is to take place. This is the fallacy of using mechanical equipment for correction of orthoptic problems. Seating a patient at an instrument is not enough. His attention to the situation must be secured.

Recognition involves the introduction of devices to help the child know what his eyes are doing. This is the chief problem in suppression. Children rarely recognize any difference between seeing with one eye or seeing (fusing) with two. They get a clear single image in either case. Some patients have slightly different vision with the two eyes, and when this is true they can learn to recognize the difference and distinguish which eye is looking at a given moment. It is usually necessary to introduce an artificial aid. Two such devices work very well. The simplest is the use of red glass or cellophane over one eye. This makes everything seen with that eye a red color; the other eye sees naturally or "white," while the fused image is a blend of the two, giving a pale rosy glow I refer to as "pink." The red cover is most conveniently fitted into a spectacle frame. If the child wears glasses it can be taped over one lens during the practice period.

With the red cover the patient gets a vivid experience of change of color every time he alternates. His first step in reading education consists in learning to recognize the change of color. He is directed to name the color of each word as he reads it. He is next encouraged to control the change of color—to read one word "red," the next one "white" and so on, in varying rhythms. If he is at all able to fuse and get "pink" he is stimulated to do so, but not at the sacrifice of observation in loss of fusion by suddenly recurring red or white.

If the pupil is unable to get "pink" he probably has a problem needing the attention of the ophthalmologist.

Once the pupil has responded to his reading problem by getting pink, he needs only adequate repetition to build up the speed and endurance of normal reading skill.

The other secondary device for recognizing alternation is the bar-reader. The bar-reader is a bar, such as a strip of black cardboard or metal one-half inch wide and long enough to extend from top to bottom of a page. It is held about halfway between the nose and the book, directly between the eyes.

The success of the bar-reader depends upon the phenomenon of normal physiological diplopia. Every object not at the same distance from the eyes as the object fixed is seen double. This is true only if we are using both eyes. If one eye is suppressed physiological diplopia does not exist. In bar-reading, the bar is closer to the eyes than the page, and it appears as two transparent bars crossing the print. Since the bars are transparent they are no handicap to reading, provided the patient fuses steadily on the print. If he suppresses, the bar changes in appearance to a single solid bar blotting out the letters behind it. Bar-reading is much more difficult than pink reading. One problem is that alternaters can make the bar jump out of the way, so that they see the print clearly all the time—it is never hidden by the bar, and they do not recognize the difference between reading *through* two transparent bars, and reading "around" the alternate bars. It has to be

taught very slowly and carefully to be sure the patient is doing it correctly; otherwise, it is useless.

In summary it may be stated that reading disabilities due to the eyes may be caused either by defects in the eyes themselves, or by failure to coordinate the two eyes. The latter error is to some extent an educational problem, since a pupil can often be taught to use his eyes better than he has learned to do for himself. Alternation between the two eyes is the commonest fusion error leading to a reading disability. The symptoms are losing the sequence of words, and slowness and effort. The correction consists of breaking down suppression and giving experience of fusion in controlled situations where the pupil can recognize his problem and practice overcoming it. Before attempting to correct reading disabilities of this character it is important to have competent medical examination of the pupil's eyes, to be sure they are corrected and ready to act as a pair.

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## VISION TRAINING: AN AID TO BETTER SEEING

*Charles W. McQuarrie, O.D., Secretary  
Bernard I. Hansen, O.D., Vice-President  
California State Board of Optometry*

As Educators, you are concerned with the many causes of reading disabilities. As Optometrists, we are concerned with all phases of the seeing act.

The general aspects of these problems, common to both of us, warrant more comprehensive discussion. Optometry is aware of this need and hope that discussions such as this will prove a common meeting ground for the educator and the Optometrist. It further hopes for continued closer cooperation between our two professions in the particular field of reading problems.

What are some of the causes of seeing problems and what can be done for them? First we eliminate certain cases from our discussion, and that is, the possible presence of pathology, congenital defects, malformation, paralysis and other related factors. However, even many of these cases can be helped with lenses or vision training or both.

In this paper, however, we are primarily concerned with *functional visual disturbances*. These are the people who are inefficient in the seeing act, and who need to be taught to use their eyes efficiently and effectively.

It has been pointed out, again and again, that the principal causes of difficulties in learning to read and spell are not refractive ones. In fact, the curious paradox seems to hold, that those individuals with poorest eye-sight tend, in the large, to be the best readers and spellers. We may even go so

far as to say that the possession of a certain none-too-large degree of myopia may be almost a guarantee of good scholarship. The difficulty, in most cases of children who present these problems, is to be found in the fact that habits of slovenly, piece-meal preception have been called upon to perform the exacting and intricate function of reading, and as anyone could predict, the end result is failure—failure which continually grows upon itself. Bad reading habits, often times, are synonymous with bad habits of work, play, and other fundamental activities, induced by improper training—even from early childhood. Educators and Optometrists, alike, therefore, should recognize that it is of the utmost essential importance to secure the full-whole-hearted understanding and cooperation of the parents and of the child, if progress is to be made.

Reversals, known more commonly as "confused reversals", are not considered serious in young children. Some naturally seem to reverse. As they learn to read more effectively, they become less confused, concerning direction, sequence and form of words. Thus, it follows, logically, that those who do not learn a good reading pattern may continue in this confused state. For practical purposes then, reversing is considered a symptom rather than a cause for reading failure.

How then, can you separate those needing additional visual care from those with adequate visual functions?

The Snellen Chart, used at 20 feet is of little value in these cases. The only information it will give you is whether or not the pupil is able to read a certain size letter at that distance. It is foolish to require clear vision at 20 feet and expect the pupil to read at a near-point without testing at the reading distance. You have, at your command, other screening devices.

In the opinion of many of us, the present Telebinocular screening tests are woefully inadequate. More adequate tests must be forthcoming. By virtue of the aforementioned facts, the pupil can have good vision and still be inefficient in the seeing act. The Telebinocular tests, however, do give information as to the pupil's fusion, stereopsis, phorias, with other worthwhile information. Failure in any of these tests suggest the need for professional visual care.

It has come to our attention that many controlled screen tests studies are being conducted by Purdue University on school children, in order to obtain statistically reliable data on some grouping of tests that will clearly show profiles of visual disabilities. Screening tests, as the name implies, are screening tests and not diagnostic tests. (See Pages - - - - this yearbook.)

Optometry hopes it may help Educators in solving the important problem of securing adequate screening tests.

In order to properly evaluate the patient's seeing problems, it is necessary to have a complete analysis of the case by an adequately trained and interested refractionist with an insight into reading problems. The examination given to a routine case will not suffice where a reading problem exists. Many tests, observations, consultations with patient, parents and teachers, plus the percentile arrived at by you in your reading rate and comprehension tests, may be necessary before a true analysis of the patient's seeing problem can be made.

After a careful analysis of the data, a decision is made as to the need of Vision Training. A program is then laid out for each case according to

regard, the referential background and other factors. In the past we were mainly concerned with macular vision. We now know that we must train the patient in a better use of peripheral vision, a better relationship between peripheral and central vision, a better relationship between figure-ground. Peripheral vision reinforces and enhances central vision. We now have training aids in these fields. These are some of the factors which are receiving much research attention at present. These projects show great promise for the future.

In our opinion the inefficient native seeing act can be trained to a higher degree of efficiency than we ever thought possible. As the patient learns to use his eyes efficiently and effectively, less energy is expended in the mechanics of seeing—more energy is available for gaining knowledge—better interpretation is gained from vision. Seeing is largely a motor act and as any motor act it is susceptible to training. Let me repeat then, the patterns of seeing are learned, as one learns to talk and to walk. They are learned to meet the seeing needs of the organism in the environment in which it is placed. If seeing patterns are learned, then faulty patterns can be corrected, in part at least, by re-education.

This concept has made it necessary to re-evaluate our thinking. The fact that the child sees does *not* mean that he has no visual disorder. This type of thinking has caused us to become students of learning problems. "Begin where the learner is" has added significance. The presence of an ocular defect or lack of it does not give an accurate clue concerning the efficiency of the individual.

In this complex age, we must read rapidly, get the content of the printed page quickly and retain what we read. Optometry's problem is not only to make more efficient readers, but also to adjust the patient's seeing to the pace set by our modern world.

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## EFFECT OF PREMATURE BIRTH ON VISION AND READING FAILURE

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Like the cake that is taken out of the oven before it has had time to bake thoroughly, the child who is born before completion of the normal term of pregnancy is likely to be below standard, especially in early life. For example he may exhibit such conditions as anaemia, rickets, bone and dental deformities, dental caries, vitamin and mineral deficiencies and neurological and mental variations. Unlike the cake, however, he grows, develops and gradually tends to overcome his initial handicap to a greater or lesser extent.

Such children are widely believed to overcome the ill effects of prematurity at a rather early age and to have compensated for their early handicaps by the time they enter first grade.<sup>(10)</sup> Recent research has shown that the effects of prematurity, particularly as regards visual defects, tends to persist well into the middle grades.

One hundred ninety-six children of premature birth who reached school age were given the Binet tests and 8.7% were found to be mentally inferior.<sup>(9)</sup>

Six hundred nineteen children within the age range of five to and including seventeen were studied and one hundred fifty-five were found to meet the criteria for prematurity, i. e. birth before completion of the normal term of pregnancy or a birth weight of 5.5 pounds or less. These two groups were compared as to eye condition and the little underdone cakes presented a higher frequency of low vision throughout the age range studied and a poorer median visual acuity through the ninth year.<sup>(9)</sup>

Another study was made of one hundred poor readers and a much higher percentage of prematurity of birth was found than is commonly encountered in the general population. More premature cases presented defective vision, neurological lesions, slow recognition speed and certain variations in lateral dominance than did the other pupils in the group.<sup>(9)</sup>

These studies emphasize the importance of prematurity of birth as a handicap that persists well into school life, predisposing the child, in many instances, to deficiencies that can interfere with his ability to do school work. Poor vision, slow recognition speed and lateral dominance variations are well known as factors in reading failure, while neurological and mental deficiencies are obvious contributors to generally poor school achievement. Further studies involving the responses of prematurely born children to psychological and educational tests are under way and may bring out more specific relationships of importance to pedagogy. Meanwhile school people should consider prematurity as one of many possible etiological factors in failure.

Birth data should be made a part of school and educational clinic records and allowances should be made for the premature child whenever he appears to be unable to compete with his classmates. Of course not all prematurely born children are educational problems. Some of them have overcome the initial handicap before school entrance and these will offer no greater trouble than their schoolmates of full term birth. In general, however, the premature pupil should not be overstimulated or driven to attain the performance level of more able pupils. Careful general physical examination and thorough professional eye examination should be given in order to disclose any handicapping defects or deficiencies that may persist.

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its peculiar needs. All cases, however, begin with the training of basic visual skills. The most essential of these are:

1. Motility—pursuit and fixation ability.
2. Adequate focus response. The patient not only must be able to shift his focus easily but must also have reserve ability to maintain focus on the printed page.
3. Hand and eye coordination.
4. Simultaneous binocular vision. We must see that the patient uses his eyes as a team. The patient should have good fusion, good stereopsis, no suppressions. If we had but one eye, we would eliminate many of our visual difficulties but we would also lose much of our seeing ability.

Special techniques may be introduced according to the needs of the patient.

One of the newer techniques, with which you are familiar, is the use of the tachistoscope. You may know it better under the name of "Flash Training". This is a technique wherein forms, digits, letters and words are flashed at varying speeds upon a screen. The patient is required to reproduce accurately the material flashed. With the use of the tachistoscope, the person receiving training is compelled by sheer mechanics of the technique to reach out and grasp the entire subject matter being flashed. When words are used, there can be no breaking down into parts, the entire word is seen at one flash. That is why spelling is so often improved tremendously by this method. The entire word is seen, each part as clearly as all of the other parts. You will find that upon the completion of tachistoscopic training, properly supervised and given, the reading rate will be greatly expanded with no loss of comprehension. We have no hesitancy in stating that the formal skill acquired thus indirectly or incidentally, is as basically important, or more important than the out and out memorial increase from the training. Once the bad speller first gains the feeling of confidence and mastery from smooth simple and certain performance, he has gone a long way toward removing an enveloping block, which can and does hamper many other functions. The conception of unity in visual behaviour demands just that. It is believed by many that this sort of training, used to increase the speed of seeing, as well as the span of seeing, is indeed valid. When a child, for example, beginning with two digits is trained to see six digits, this skill is transferred to his reading tasks. It means he makes fewer eye movements as he reads a line in a book. He makes smoother fixations, more accurate fixations.

Another technique found to be very valuable is retinal rivalry training. One eye seems to go into a rest phase as the other takes over, making in a normal case twenty-eight to thirty-two cycles per minute. A person cannot have good stereopsis without a good retinal rivalry rate. Training this skill will increase stereopsis as well as aid in reorganization of the fields.

In prolonged fixation within a restricted area, such as found in reading from a printed page, we tend to lose our ability to maintain figure-ground relationships, relationship between central and peripheral vision, and the judgment of depth.

Much goes into the interpretation of what we see other than just an image formed on the retina which is transmitted to the brain. Some of these factors are gained from our past experiences, familiarity with the object of



## AURAL READING

# AURAL READING AND CHILD MALADJUSTMENT

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On several occasions in this annual Claremont College Reading Conference I have touched briefly upon one of the graver consequences of aural malfunction, viz., how misunderstanding of impairments of the sense of hearing all too frequently leads to a state of maladjustment that is loosely termed delinquency. We have called attention to the fact that the child with impaired hearing is found more frequently among so-called juvenile delinquents than are children with any other form of physical defect.

During the past eight years it has been my privilege to be associated with Juvenile Hall Hospital and Clinic, Los Angeles, doing original research in audiological problems of Juvenile Court wards, and serving as Consulting Audiologist of that institution. In that capacity I have talked with and audiometrically examined many thousands of boys and girls representing nearly every state of the Union. I have studied their case histories, reviewed psychological and psychiatric findings with the object in view of learning as much as possible regarding the deleterious effects of crippled hearing.

As the result of those eight years of research I do not hesitate in stating that it is my belief that crippled hearing is one of the major factors of, if not *the* major factor in child maladjustment today. And before there can be any misunderstanding of this statement, I wish to say that the record is very clear that the deafness itself is not the major cause of maladjustment. The almost universal ignorance of deafness because of its complexities; its neglect by school authorities and their proneness to leave matters auditory in the hands of untrained persons have brought about this sociological crime against childhood.

In the preface to this report and the several case histories mentioned in its support, it should be stated that the discovery of the preponderance of auditory defects among our so-called delinquents as compared with non-delinquents is not new. This condition has been recorded in the literature for many years. No systematic research, however, had been made prior to this one at Juvenile Hall by the Auricular Foundation. Hence the results obtained from the study should be seriously taken into consideration by all those interested in the problem of child maladjustment until subsequent research has either supported or refuted our findings.

Why crippled hearing has not been adequately studied heretofore as a contributing factor in child maladjustment may be due to five principal reasons: (1) Crippled hearing is invisible, and except by the trained observer is too often misunderstood as inattention, dullness, or even an undeveloped or limited mental capacity. (2) Understanding crippled hearing involves acoustic physics and few are trained in this basic science. (3) Its study, and even its detection, has been erroneously considered strictly a medical problem. (4) Most of the literature on deafness does not even

touch upon maladjustment. (5) All of the past, and most of the present, methods of detecting and measuring crippled hearing are not too scientific.

The combination of the five reasons, together with the inevitable unhappy situation a child with crippled hearing finds both at play and at school could not possibly increase his capacity for good social or educational adjustment, regardless of the many other assets he may have in his favor.

Our research had not progressed very far before the following facts became clear. The classical reports in the literature to the effect that the retardation of children with impaired hearing averages one and one-half years was verified. Serious speech defects were found in great numbers. Poor ability in the reading of printed words predominated among the poor hearers. Intelligence quotients were lower than the average.

Then it was discovered that Spastics have a serious defect in hearing; this almost without exception. There was a very high incidence of illegitimacy among deaf children, and far too large a percentage of congenitally hard of hearing children came from mothers who were "chain smokers" during the pregnancy for that factor to be ignored.

Prior to this research the inadequacies of group testing with a phonograph had become evident. Not only did such testing miss more children with crippled hearing than it detected, but the results permitted no differentiation between types of hearing losses without which aural research would be of little value. Individual tests, made with a pure-tone audiometer in a sound field, were conducted, and those children found to have a loss of hearing now accepted by the State of California as crippling, were tabulated. Those having a lesser degree of loss, even though it is probably significant, were for the purpose of this study, classed as normal of hearing.

On this basis it was found that 55 per cent of the boys and 51 per cent of the girls in Juvenile Hall have a loss of hearing of at least 20 decibels in one frequency of the speech range. School statistics, while showing variation due to different audiometric technics, seldom show more than 10 per cent of children with such hearing losses and the average is about 6 per cent.

For the benefit of those who are inclined to question statistics rather than the problem itself, we can arbitrarily raise the school percentages and lower the Juvenile Hall percentages and still have a figure which is not pretty. For instance: the United States Children's Bureau estimates that a minimum of 2 per cent of all school children have a SERIOUS loss of hearing. The average in the Juvenile Hall is 20 per cent of the boys and 15.5 per cent of the girls with a SERIOUS loss. Two per cent of the Los Angeles City School population is approximately 7,000, of which fewer than 300 are receiving any special education. If we attempt to discount the Juvenile Hall figures by increasing the Children's Bureau estimate to say 3 per cent or 4 per cent, then the number in Los Angeles would be 10,500 to 14,000. Any way they are examined the figures are still ugly.

It soon became evident that hearing defects could not be classed in one grouping versus normal hearing, as the two completely divergent types of hearing defect, conductive and perceptive, disclosed radically different results from every standpoint. This was also noted as equally significant between the sexes. First there was the highly relevant fact that those with crippled hearing were more likely to return to Juvenile Hall for the second

or third time—than were those normal of hearing. Figures disclose that normal hearers could be expected to average one and one-quarter times in the institution, those with conductive deafness two times, and those with perceptive deafness two and one-half times.

Differences between the types were particularly significant when checked against the diagnosis of the otologist, Melverton E. Trainor, M. D. (See Chart) Not only did the criteria used to separate normal hearers from crippled hearers prove in general to be a good dividing line from a pathological standpoint, but differences between the types of crippled hearing were likewise disclosed with equal clarity.

Four hundred cards, selected in groups of 100 from four studies, were checked. The 100 normal hearers were used as controls. One hundred conductively deafened formed Group II; 100 perceptively deafened formed Group III and 100 with a loss only at 4096 frequency but with normal hearing elsewhere in the speech range, formed Group IV. Briefly the conclusions are as follows:

Fewer normal drum heads are found with high frequency losses of hearing.

Retracted drum heads are generally indicative of hearing impairment. More than twice as many infected tonsils are found in children with a conductive type hearing loss as are found among the normal of hearing, but infected tonsils are not a clue to perceptive type loss.

Surgery or treatment was recommended from two to three times as often among cases of the hard of hearing as among those normal of hearing.

Almost a third of all groups with hearing defects have some nose defect or are in need of nasal attention.

Perceptively deafened children show an incidence of glandular disturbances more than twice as often as do other children.

There is a positive correlation between visual defects and the occurrences of the perceptive type of hearing impairment.

So far as is known, this is the first time symptomatic visible pathology has been checked against audiometric findings. The consistency with which the results coincide with classical definitions of types of hearing loss are further proof of the validity of pure-tone audiometrics of school children, both from the standpoint of educational understanding and for selection of those most likely to be in need of medical attention. Thus it can be concluded that deafness as a factor in maladjustment can be markedly reduced by medical treatment from the standpoint of prevention.

In a breakdown of findings, starting with sex, some interesting information developed. There was nothing surprising in finding that boys outnumbered the girls almost three to one in the control group. There are more boys than girls in the Hall and the condition is not questioned. But immediately the conductively deafened group is checked we find the percentage has been completely reversed to approximately three to one in favor of the girls. The sameness of the number for boys and girls in the perceptively deafened group is also worthy of note, for herein is a first indication of a most extraordinary discovery. It will be noted throughout the entire report that deafness can not longer be studied as of but one type. The variations between the sexes and the types of deafness indicate a very great difference in the resulting effect upon children.

In the final analysis of the delinquency problem, the degree of seriousness of the delinquency can be roughly estimated by the number of cases which have been sent to some school or institution rather than returned to their homes. The study clearly shows that a larger percentage of all deafened groups, both boys and girls, are sent to some school or institution by the Juvenile Court. As may be expected, more boys than girls of the controls are thus disposed of: 40 per cent of the boys and 33 per cent of the girls.

From the conductively deafened group 50 per cent of the boys and 40 per cent of the girls have been placed away from their homes. The perceptively deafened boys have had 50 per cent of their group sent away and 63 per cent of the girls were thus disposed of by the court.

A further breakdown of Court disposition brings out vividly the greater seriousness of perceptive type deafness over the conductive type. Under classification of those sent to some peno-detention institution other than a private home or school because the Court believes either penal correction or twenty-four hour supervision is required—in other words those so socially maladjusted that institutionalization seems to be the only answer—we found that of the 40 per cent boy control group only 26.6 per cent were in the latter group, and the girl controls had dropped from 33 per cent to but 9 per cent. Coming to the conductive type of Group II we found that one-half as many of the boys sent away, or 25 per cent, were sent to a peno-detention institution, and but 8 per cent of the girls. Thus we find that under this type of punishment normal hearers and conductively deafened are almost on an exact par. It may be that herein lies the secret as to why no such investigation had been undertaken heretofore. This decrease of about one per cent for both boys and girls over the controls follows out a belief of the writer that those who are conductively deafened are not of the general type which the Court considers hopelessly maladjusted, but are more often to be found as followers of more aggressive persons. If one who is interested in the study of maladjustment due to auditory impairments will check this fact against the results of most hearing tests of the past, he will find that conductively deafened predominate in those found, and the results are entirely consistent.

The figures of the third group, or those perceptively deafened, are further proof. Seemingly these children are more often judged to be in need of more severe punishment, for of the 59 per cent of boys sent away, 31 per cent were institutionalized, and of the 63 per cent of the girls, 40 per cent of the total were sent to some peno-detention institution; just five times as many as were so treated among the conductively deafened. This is most significant.

It has been pointed out before that there is a difference between the hard of hearing and the normal of hearing. There is a school of thought which believes there is a definite psychological pattern for the handicapped as a group, while another school of thought believes there is no such pattern. This report seems to lend support to the latter belief. While there are indications that the deafened children follow certain trends because of the almost universal disregard for the feelings of those with crippled hearing, their response to various stimuli is at wide variance according to the type and degree of the deafness. This condition prevails also between the sexes.

In going into the reasons why children are taken into custody, some

interesting facts are disclosed. It is clear that children with impaired hearing have been taken to Juvenile Hall for sufficient reasons. Whatever has caused a preponderance of their group to become entangled with the law, they have performed their share of unlawful acts. In the one grouping which seems to be peculiarly male in scope, i. e., the stealing of automobiles, robbery, burglary, and other stealing, they are not much worse or much better than the controls. But we find fewer of the deafened girls charged with such crimes than appears to be true of those with normal hearing.

Directly opposed to this last grouping is that of sex offenses in which more than twice as many of the perceptively deafened girls were thus charged as compared with the controls. How else can the increase in the percentage of sex offenders among the deafened girls be explained other than because of their handicap? This is not because there is any connection between deafness and a normal moral outlook but because of the lack of friendship which the record shows is one of the penalties hard of hearing girls bear most often. Girls are noted for their unkindness toward those who are "different," and the hard of hearing girls, finding companionship with other girls a most unhappy lot, or denied them altogether, turn in desperation to the opposite sex, who often take advantage of the unnatural situation.

Unquestionably a thorough understanding of the problems of hard of hearing girls would eliminate much of this type of difficulty. The desire for companionship has driven many deafened boys into bad company and this applies equally with girls.

Popular beliefs as to causes of delinquency do not stand up in the face of statistics, particularly when analyzed. It has been stated that lack of adequate care in the home is a major cause of delinquency and this seems to be true insofar as the normal of hearing girls are concerned, but we found that both groups of deafened girls had a smaller percentage of their number of homes without adequate care, although there were more boys from such homes. On the other hand there were more boys of the deafened groups and fewer girls from homes where parents are living together.

Divorce, too, has been declared a culprit, yet in both groups of the deafened—boys and girls—there were fewer from divorced homes than occurred among the controls. Not one girl in the conductively deafened group was from a divorced home.

Poverty, also, must be discounted as a factor among the deafened, for with the exception of the boys in group one of the conductives, all deafened children showed a smaller percentage from poverty stricken homes. Broken homes statistics were in favor of the deafened in all groups except those of the girls in the conductive group.

In homes where poverty could not be considered, we found more girls than among the controls who came from homes held to be adequate financially, and more girls and fewer boys than among the controls whose homes were adequate socially.

Thus it could be concluded from almost every standpoint under study that the crippled hearing was a factor which must be considered. In more than 90 per cent of the cases no hearing test had been made before, even though many psychological examinations had been made.

Case 1. An eleven year old boy declared to be feeble-minded. Had been treated for crippled hand. School entrance examination report gave



his Intelligence Quotient as 49. Recommended for twenty-four hour care. Referred to Auricular Foundation. School reported too low mentally for hearing test. Examination by the writer disclosed severe loss of hearing almost invariably found following certain type of birth injury. Psychological examination given the boy wearing hearing aid supplied by Foundation. Result: Normal, probably superior. Exact mental age not defined because of newness of instrument and unfamiliarity with use. I. Q. about 110. Psychiatric examination found the boy normal.

This boy had been refused by public school because of error due to ignorance of his hearing defect, plus the inability of Health Department to diagnose his difficulty. He has been taught by his mother and is now doing seventh grade arithmetic.

Case 2. Sixteen year old boy. Quarreled with sister and arrested on belief he intended to commit suicide. Severely deafened since birth and in special school. Accumulation of material against him in case history but correctly placed through intervention of Auricular Foundation staff. Now in home where he is getting along splendidly after being transferred to school where teacher has complete understanding of his aural problem.

Case 3. Nine year old boy with no outer ear. No schooling. Father went down on the Houston. Up for placement in feeble-minded institution. Examination disclosed normal bone conduction and fitted with bone conduction hearing aid. Psychological examination reports normal in every respect.

Case 4. Eight year old girl. Failed at promotion last year and ran away. Picked up by police and brought to Juvenile Hall. Hearing test disclosed dull hearing. Probation Officer reported facts to school. Child placed in front of room. Immediate favorable results noted. No more complaints. Child happily adjusted.

Case 5. Seven year old girl. Retarded in all subjects. Held to be far below par when given Stanford Binet test. Sent to Foundation Clinic. Schooling supervised for several years and she is now doing well in school. Elected class secretary.

Case 6. Eight year old boy. Found to be seriously deafened. Special schooling recommended but before this could be arranged he was into more trouble and sent to peno-detention institution where medical recommendations were carried out. Seen at the age of fifteen. Hearing almost normal, but result of incarceration developed all the bad qualities the boy possessed. Declared to be psychopathic delinquent. Will in all probability end up in San Quentin due to inability of Foundation staff to follow up and salvage this error of society.

Case 7. Fourteen year old girl. Chronic truant. Examination disclosed perceptive deafness unknown to girl or family. Thought herself "dumb" and school a torture. Personal contact with teacher and student leaders cleared up her difficulty. She is now completely adjusted to her school life and doing well.

Case histories could be listed by the hundreds in which crippled hearing was found to be the principal difficulty. In most cases where other factors were favorable, such as cooperative teachers and intelligent parents, results

have been most favorable. If, however, circumstances are unfortunate and the emotional life of the child has been too long maladjusted due to the crippled hearing, the problem becomes difficult to solve.

The preponderance of crippled hearing among delinquents; the almost universal neglect of this most important sensory factor in not only a normal adjustment to a socialized world but as a tool for learning, as well, so clearly indicates the need for a more comprehensive understanding of aural problems that in years to come we will wonder how we neglected it so long.

\*NOTE: At this writing I have devoted nearly nine years to the study of crippled hearing. It had been my intention to retain the material in this paper for some future date, but I feel that there will be no opportunity for a better presentation to interested persons than to the Claremont Reading Conference. It is my fervent wish that this paper will be the means of clarifying to some extent the reasons for the existence of the Auricular Foundation and its goal, which is that every child shall have a chance.

—Willard B. Hargrave, Founder and Executive Director,  
Auricular Foundation, Inc.

Condition of	GROUP I Normal	GROUP II Conductive	GROUP III Perceptive	GROUP IV High Fre- quency Loss
<i>Eardrums</i>				
Normal .....	40.0%	16.6%	3.5%	8.0%
Passable .....	46.6%	11.1%	22.2%	16.0%
Retracted .....	13.4%	66.6%	74.3%	76.0%
Perforation .....		5.7%		
Throat Clean .....	60.0%	27.8%	70.3%	26.0%
Infected Tonsils .....	33.3%	72.2%	23.7%	58.0%
Imbedded Tonsils .....	10.0%			
No Medical				
Record .....			6.0%	18.0%
Removal of Tonsils and Adenoids				
Recommended .....	20.0%	54.0%	18.5%	74.0%
Endocrine .....	10.0%	11.1%	26.0%	8.0%
Visual Defects .....	6.6%	1.6%	14.8%	4.0%
Nose .....	0.0%	33.3%	22.2%	26.0%
No Recom- mendation .....	60.0%		17.5%	
Recommendations				
Total .....	36.6%	100.0%	81.5%	112.0%

NOTE: Fractional percentages due to some records missing.



## THE CLASSROOM TEACHER AND THE AURALLY HANDICAPPED CHILD

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The importance of successful reading to the life of an individual has long been a well-known fact. It was not until educators began scientifically to look for basic factors causing difficulty in learning to read, as well as difficulty in reading with satisfaction to the individual concerned, that it was found that aural and emotional factors were just as important in the reading process as the visual factor. These truths are not fully known, nor is their profound significance appreciated—as yet—by the rank and file of classroom teachers. When the complete relationship between hearing and language, language and reading, is understood, and when the need for a well-adjusted emotional pattern is perceived by every teacher from kindergarten up, then, and then only, can we help children to develop into good readers in the most comprehensive meaning of that term.

The number of educators is growing who realize that in every classroom there are many conditions of hearing, just as there are many conditions of vision. When these aural conditions fall below fifteen decibels in any two tones of the speech range, the child has impaired hearing and, invariably, a disturbed emotional pattern that must be adjusted. A teacher, having been told of this special type of reading problem, will look over her class, find no one to whom she must shout to make herself heard, and immediately conclude that, thank goodness, this is one problem she will not have to deal with this year. Right here is where a thorough knowledge of what a hearing loss really is will do more to lighten that teacher's worry load for the year than any other factor.

So many, many teachers leave lecture rooms with the ever-present criticism: "They never tell us practical, down to earth things. I want to know what I can do in my classroom for my children." The rest of this paper is practical knowledge that has been applied in classrooms and will work for you, if you are truly interested in developing your pupils into complete, well-adjusted adults.

First of all, a child with a hearing loss is not a deaf child. Any sound you hear, and this is especially true of speech, is made up of a number of tones. Our ears are so constructed that any one of these tones may not be heard, or may be heard much more faintly than the other sounds. This results not in deafness, but in a distortion of speech, or in hearing only parts of words. There are two general types of hearing losses and an individual may have one or the other, or both, or any combination or degree of either or both. One is a loss in the high tones and the other is a loss in the low tones. A child with a high tone loss usually hears enough volume—often too much—but misses the consonants which give meaning to our language. On the other hand, a child with a low tone loss needs far more volume, as he is missing the vowels and guttural sounds of our language, which is the body of speech.

A great many schools, now, are testing the hearing of their children

with pure-tone audiometers, which are the only kind that can tell you what tones are being missed. This is a wonderful beginning, but only a beginning. Because of lack of funds as well as personnel, this constitutes the hearing conservation program in many places. With only this much knowledge you, as a classroom teacher, can do an immense amount of good for your pupils who need help. Take the report of the audiometrist and thoroughly acquaint yourself with the type of loss, and degree, in each ear for every one of your handicapped students. Just knowing the children in your room who have aural impairments is the first important step in helping them to make their adjustments. There are seldom more than one or two with seriously handicapping impairments. You may have five or six who are just on the borderline of achievement and for no reason known before simply never made the grade. This is the great group of children that can be helped completely and satisfactorily by the classroom teacher, leaving the hearing specialist more time to devote to the more severely handicapped ones.

A child with any type or degree of loss is a bewildered child and as the degree increases, he becomes more and more confused. Not quite understanding orders; thinking one thing was said and seeing the others doing something else; hearing sounds at times without meaning; all results in a bewildered child who is always slow in doing as the group does, who seems to need so much prodding before his assignment is complete. This is the basic characteristic of all children with impaired hearing. From then on it depends upon the personality of the child as to how he reacts to the confusion he lives in. The constant drain of his energies in trying to keep up, soon tires the pupil and he reacts accordingly. Some children more than others need to feel a sense of achievement, so these promptly become the behavior problems. Anything in which they can excel and win approbation of any sort becomes legitimate activity, whether it be annoying their neighbors or busying themselves with other things not conducive to classroom achievement. Other children simply wish to get out of the limelight and withdraw within themselves. They may work very steadily and quietly at written work and assignments they can understand, simply never doing the things they do not comprehend. Again, they may just sit and dream and need perpetual prodding before achieving anything.

The aggressive, negativistic child is the most difficult of all children with aural difficulties to help. He goes out of his way to assure you that he is not confused, he very definitely acts whenever he feels an assignment has been given, whether it is the correct channel of endeavor or not. If he has chosen the wrong avenue, he will try to continue at all odds, because if he changed his course you would know that he had not understood in the first place. This attitude in this type of child becomes deeply ingrained and is the basis for much delinquency. An understanding teacher can quietly be very sure he knew what was expected of him at all times. Since he wants so badly to do, the energy he will expend in achieving in the right direction will well repay the added effort put forth in his behalf.

The result of a hearing impairment is often very pronounced in the voice. Children who miss the high tones or consonants, often hear too much noise, so sounds seem very loud to them and they talk in soft voices. These children need help in enunciating clearly and with enough energy to be heard. Those to whom the vowels are indistinct, will use loud voices in

order to hear themselves. These pupils need help in talking in softer voices. All children can get the feel of the proper tones for conversation with the praise of the teacher at the right time. As this feeling becomes habitual, the voice will assume much more pleasing qualities.

The classroom teacher must know the type and degree of the child's loss as the audiometrist reports it, in order to understand why the child reacts as he does in the classroom. These basic reactions and the fundamental reasons for them as developed in the foregoing, are the only special knowledge the teacher needs. Knowing this, her next problem is to establish the correct relationship with her pupil. Understanding what he has to contend with and knowing how he can be helped, there is no reason for maudlin sympathy on the part of the teacher. This same knowledge precludes indifference, too.

Unknowing teachers have often remarked, "He does such senseless things!" or "There seems to be no reason for such behavior!"

Mere awareness of the problem on the part of these same teachers has brought forth these later responses:

"You know, he doesn't do crazy things any more."

"There are reasons for all his actions, now."

"He is really a lovable child when I know why he behaves as he does."

This very important awareness is the first step to successful teaching of that child.

An individual talk with the pupil about the troubles he is having will be very illuminating to both participants. If the talk is a normal outgrowth of some classroom work, the teacher will gain a fund of knowledge about how he hears, what disturbs him most, the subjects he feels most at sea about, and a wealth of knowledge about his social reactions. On his part, sensing that he has finally found someone interested enough in his difficulties to want to help him, the child will develop amazingly. Tell this child he must learn to use his eyes. Watching your face when you talk, especially your lips, he will soon understand your speech much better. Tell him that if he watches you carefully, you will always make sure he understands what you expect of him and if he does not understand after careful watching, encourage him to ask, quietly and courteously. It will take very little time to explain to him or go quietly to his desk after the others have started, and be sure he does know what to do. You much encourage his looking to you for help, and as he learns by attentive watching, he will take less and less time individually. You on your part, will see that his periods of close observation of you are not unnecessarily long, and that he has enough work to do on his own initiative to build up a sense of self-reliance. In other words, you give him the extra attention he needs to strengthen him to take his place in life as a self-reliant individual, just as you give an unhandicapped child the extra help he needs in the subjects he has difficulty with.

It helps a great deal to talk to the class as a whole about the importance of always facing people to whom they talk, good enunciation, and pleasing voices. These are simply good principles of every day conversation. No mention of any aural impairment is necessary, yet if these principles are adhered to in the classroom, it is a tremendous boon to the handicapped children.

If you have one or more children sufficiently handicapped as to need speech-reading, and if you are in one of the schools where these special classes are held, use a little extra effort to make it clear to all how very fortunate these pupils are to have such help. A little kind directing and there is no need for any child with a hearing loss to feel a stigma of any kind.

The same thoughtful discussion of hearing aids and the purpose they serve, will make the wearer of one, should you have such a one in your room, an object of almost envy, rather than ridicule.

So much that the classroom teacher can do to help the child with impaired hearing is just good, kind, thoughtful living in a social group. It is all based on the knowledge that the child does have a loss and the only sure way to know that is by a pure-tone audiometric test.

Specifically, there are a few things the teacher should be prepared to do. She should seat the child advantageously in the classroom. This does not always mean that he should have a front seat. It means that he should be near the space where the teacher does most of her talking. The front seats are good if she talks from the front and stands back far enough for her face to be plainly visible from those seats. If she talks from the side, then side seats are better. She should determine which is the better ear, and seat the child with the better ear toward her as she talks, always remembering to keep his view of her face unobstructed.

How, when, and where the teacher talks are very important to the child with a hearing loss, but the principles involved make for good classroom procedure in general as well. She should stand with her back to a darker area, with the light on her face. This enables lip-readers to see her countenance clearly and makes a more easily followed discussion for the entire group. She should be sure she has the attention of the aurally handicapped children before she ever begins speaking, and, once again, it insures better general attentiveness if every child is ready to listen. Lastly, and very important, the teacher should speak in a well modulated voice with clear and distinct enunciation. The best speech uses the lips, as well as the other speech organs, for the best tonal qualities; and, once again, what is good for the general classroom is a specific help to the child who supplements his other abilities with lip-reading.

In summing up, if you, as a classroom teacher know what loss the child has and take time to be sure he understands what you expect of him, he will amaze you by his earnest endeavor to achieve. In understanding him, you have already started his emotional adjustment to the classroom situation. By following the principles for good teaching, your pupil with a hearing loss will learn with ease and satisfaction and you will have helped one more handicapped child to complete development.

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## THE NEED FOR SPEECH READING

Ina Powers Sample

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Not so long ago I heard a story which was so pat to the occasion that I'm sure it is a classic by now. I don't remember who told it, or when, but it concerned a certain prosperous, thriving village by the sea. The only approach to this village was by way of a not-too-well-constructed highway; dangerous throughout, but especially precarious where it made a sharp turn and ran along a steep cliff by the sea. Many a car had failed to negotiate this turn and had piled up on the white sands below. The residents of the village were good, civic-minded citizens, and, as such, they deplored the many wrecks. Then, like all good citizens when a situation becomes too serious, they decided to do something about it. Public sentiment was aroused, a mass meeting was held, and various suggestions were made, one of which met with the hearty approval of all: SO—says the story—with a great fanfare—committees were appointed, funds were raised, and the citizens banded together to purchase the *best ambulance* money could buy.

Now it seems to me that we specialists in the field of aural reading have been buying some pretty fancy "ambulances," and, because I'm in the "ambulance business", I'm going to propose another. I shall leave road repairing to the medical profession, for theirs is the responsibility to point out to us how we may cooperate in a program to prevent the particular physical handicap of deafness, and they have done a splendid job. Articles on the subject are legion, if we would but heed.

We have done well, too, in finding and reading the deafened<sup>1</sup> child. Old methods of testing have been scrapped. Up to the minute audiometers indicate the number and range of decibels lost. State laws make regular hearing tests in the schools compulsory. Yes, we have done some excellent reading.

But the deafened child needs to read, too, and, in order to read, he must have tools which he can use—a language and symbols—speech and speech reading.

We've all chuckled over the lady—some say she was a school ma'm, but I doubt it—who went to France and came back amazed at the facility with which even the smallest child there spoke French—a language which she, a highly intelligent adult, had tried in vain to master.

"Of course," we say, "It is their native tongue."

But suppose those children had never heard French, or English, or any other language. What would they speak then? They would not speak at all, but by means of signs and noises they would evolve a language of their own by means of which they could communicate with each other, but which would be totally devoid of adequate vocabulary to function in a French speaking world. They would be as lost and as inarticulate as Lucy, Pat, Donald, or any one of a dozen children I might name, who have dropped

<sup>1</sup>Although I recognize the fact that the deaf and hard-of-hearing are taught by different techniques, I feel that their reading problem is the same, so I have made no distinction here.

in to Pasadena Junior College using the sign language and have enrolled in Chemistry, Physiology, American Institutions, or what have you.

And it is not because they are deafened that Lucy, Pat and Donald have failed to adjust. There have been others with just as serious a hearing loss—boys and girls deaf before they could possibly have acquired speech patterns—who have enrolled in Junior College and have completed the college requirements at the end of the fourteenth year, because they had a language. They had been taught to speak and to read speech.

We must recognize that Speech Reading is a language, the very special language of the deafened, which must be acquired as any other language is acquired. Since it cannot be learned through the ears, it must be taught, first, by the mother to the baby in the cradle, and then through the schools, just as English is being taught.

And here I pause to pay tribute to the John Tracy Clinic which is rendering an inestimable service in training mothers to teach their deaf babies speech reading and speech. Their waiting list is long. There should be ten John Tracy Clinics in Los Angeles, and ten times ten throughout the nation, all thoroughly staffed and equipped.

We are proud, too, of our Hearing Conservation Classes in the Pasadena City Schools. There is a class for children in the elementary schools, grades one to seven; one for the Junior High School pupils, grades seven to eleven; and one in Junior College covering grades eleven to fourteen. The teachers are expert, well trained and well qualified for their jobs, and the Administration is understanding and cooperative.

But such a set-up is all too rare. Such classes are needed in every school system in this country. There would be no dearth of pupils, for, sad as it is to admit, the vigilance of our classroom teachers and our improved finding techniques are turning up new cases daily—pupils who are failing to adjust because they can no longer read, and who need a new language for their changing milieu.

Why, then, are there so few hearing conservation classes in our schools? True, the number of the deafened is only three per cent of the number of those with normal hearing, and small classes raise the per capita expense, but as often as I have asked the question, I have yet to hear an objection to such classes on the ground of expense.

No. There are other answers, and one of them I learned the hard way when I tried to find a "Substitute". You far-seeing school superintendents know it, too. You've tried to provide adequate training for your exceptional children, but "Where," you ask, "Are we to find teachers?"

When I first learned that answer I went to the Colleges.

"What are you doing", I asked, "to train teachers in the special fields?"

I expected them to say that there were no teachers to train teachers, and I had an answer to that one. I and half a dozen teachers I knew were especially trained to do just that, but our services had never been required in College summer sessions. But they fooled me. What they said was that not enough cadet teachers would enroll to warrant establishing such classes.

I found they were right when I went on a one-man recruiting campaign.

"What are the requirements for teaching in special fields?" asked every likely cadet I approached: And when the State requirements were outlined the universal answer was, "No, that would mean at least a year of extra



preparation over and above the requirements for teaching English, History or any other subject, and the salary of special education teachers is no higher than that of teachers in other fields."

What, then, can the schools do to recruit teachers in special education? Perhaps we can find the answer in what they are doing to recruit teachers in other fields.

Should the standards be lowered as was done in the case of granting "emergency" credentials? Certainly we hope that this measure is only temporary. Should teachers with special preparation command higher salaries? There is a growing tendency in that direction. Good "ambulances", both of these devices.

But beyond these measures there is the necessity to foster a growing understanding on the part of the public of the need of deafened children for speech training and training in speech reading. Their need is as demanding as the need of normal hearing boys and girls for English, French or any other language. And with this understanding must go an appreciation of the service rendered by the teachers of these special techniques; A service as great as that rendered by the teacher of public speaking, whose boys and girls bring home trophies from oratorical contests.

This is the challenge we face. Yours for more and better Hearing Conservation Classes.

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## THE RELATION OF SPEECH TO READING READINESS

*By Alma Wedberg*

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Before any child is a reading child, he is first a speaking child. If the child has poor auditory discrimination when he is acquiring the language between one and two years of age, he will very likely have faulty articulation in speech. Partial deafness, too, is often the cause of sound omissions in the child's speech. The child who says "tar" for "star" and "rooter" for "rooster" probably at that very early age didn't hear the high frequency sound of "s" and consequently gave back what he heard. According to Ralph W. House, Research Assistant in the Reading Clinic at Pennsylvania State College, about 42 per cent of poor readers have great difficulty in sound discrimination. The consonants which he cites most frequently confused such as "sh" for "ch" (share for chair) "t-d," (time for dime) "p-b," (pet for bet) "w" for "wh" (weel for wheel), or the short vowel sounds for long vowels are really speech defects according to definition because they substitute one



sound for another. Added to this list, the writer could submit "t" for "k" (tat for cat) "d" for "g" (dough for go) "f" for "th" (fum for thumb) "wady" for "lady," "Wobert" for "Robert," and a host of others.

Leaders in both fields of speech and reading agree on the definition of auditory discrimination as being the ability to recognize similarities and differences in the sounds of words and word elements. The question, then, is where and how may the child lacking in this ability be taught it. Our thesis then shall be to show how discrimination, visual as well as auditory, is definitely a prerequisite for reading, and that the logical place should be in kindergarten and first grades. The popular reading readiness programs have given us the best help in assuring success in beginning reading. Among such factors included in these tests are mental age, language ability, motor skill, auditory discrimination and visual discrimination. Since speech is closely related to each of these factors, why isn't this preparatory stage for development of reading the logical place for teaching sound discrimination.

Dr. Gray sets forth seven prerequisites for reading readiness, five of which pertain to speech. Since many of the activities in the kindergarten and primary grades are speech activities such as conversation, discussion, story telling, and dramatizations, no definite period should be set aside in which regular setting-up exercises in speech are given. Rather the time spent in these exercises could more profitably be spent in extended ear-training.

Let us inject this bit of admonition. Before a teacher can do much to improve the speech of others, she must not only have a good pattern herself, but she must also be sensitive to speech sounds. Therefore, the prerequisite for a successful kindergarten and first grade teacher should be a pattern of speech free from any defect which would be worthy of imitation. It is complimentary and to be expected for children to try to be like those they love and admire. An interesting incident which the writer experienced may serve to clarify this point. One time when the speech supervisor was making a survey of speech irregularities in a certain school district, she was surprised to find such a large percentage of first grade children having the same defect. It happened to be nothing more than the common lisp, but to have more than six or seven in the average classroom was the cause for concern. At recess she spoke to the classroom teacher about this unusual number of speech cases. In response, the teacher said, "Ith that tho?" She was a vivacious, beautiful young teacher extremely interested in children and very appealing to them. It wasn't any wonder that the children, consciously or unconsciously tried to be like her even to the point of adopting her speech defect.

Before we launch upon our discussion involving exercises and suggestions to establish auditory discrimination for those children who fall in the second and third groups lacking in reading readiness, it will be appropriate to mention other causes for poor sound discrimination, all of which may effect learning to read and may be treated in the reading readiness program. Usually the speech defective falls in one of these groups. In addition to the seeming lack of proper development in the auditory nerve relative to acuity at the time speech is learned, and actual partial deafness in hearing a certain range of pitches (vowels or consonants—low or high tones) there are other factors, social ones, which cause poor auditory

discrimination. Mispronunciations of words which the child has heard from those in his home life, foreign accent — Swedish, German, Spanish, etc., sectional speech such as southern dialect or eastern American speech, all have definite influence upon the discrimination of speech sounds. Children say the words as they have heard them and if the pronunciation differs from the accepted standard of English, then of course, the child is at a loss to know what word the teacher has said or what word to associate with the printed symbol.

Our first lesson in training the child to recognize similarities and differences in sound is to train the child to listen. Begin with the experiences which present themselves in the regular activities of the classroom. Just as the music teacher works around a tone, using wide differences in pitch at first, then toward pairs of tones which are similar, so should the regular classroom teacher train the ear to hear differences in vowel sounds as well as similarities of voiced and voiceless consonant sounds. Most of our English consonants come in pairs. For example: "t" and "d" are counter parts. They have the same tongue placement against the upper gum ridge, but the only difference is the vibration of the vocal chords. The "t" has breath and the "d" has voice in its production. It must be clearly understood that we are considering the *sounds* which these symbols make and not the *name* of each letter. More will be said about this later.

A piano is most helpful in teaching children to listen to low tones and high tones, but it isn't absolutely necessary in order to teach sound discrimination. The teacher may sing two tones and ask the children to tell whether the tones are the same or different; whether one is high or low and which is higher?

If there is a recording machine available such as an R.C.A., microphone, etc., have the children speak their names and addresses on a record and then play it back immediately. This is a valuable device for teaching phrasing, pausing, rhythm and volume. For the first time in their lives, perhaps, little children understand what teacher has meant when she says, "Speak louder," because for the first time they have heard their own voices.

Occasionally, teach children to listen to passing vehicles, such as trucks, automobiles, street cars, and airplanes. It's interesting to note how very keen they become in identifying sounds and associating them with their proper sources. Some children living near an aircraft training center during the war were able to identify a P-38 from other planes as they would pass over the school house during school hours. Gradually children will learn to tell what vehicle is passing and in which direction it is going just by attentive listening.

At this stage in developing sound discrimination, a child will be able to discern the difference between sounds in words. When training the child to recognize likeness and difference in speech sounds, it is most important for the teacher to give complete sentences, or thought groups which the children repeat before giving single words or isolated sounds. Learning new songs and poems appropriate to the child's interest and level of understanding are means for dictating and repeating. Begin this ear training game by pronouncing words which have the same beginning sound as "cake, come, and cat." Have the children listen first and then repeat. Introduce pictures of objects with the same initial sound. Do not have the letters representing the sound anywhere on the card for we are not concerned with teaching

the names of the symbols at this developmental stage for obvious reasons. If you should discover a child who substitutes some other sound for the "c" (which is sounded "k"), then be sure to show that child how to make that sound. It isn't necessary to single this child out as being different, but use yourself as a guinea pig and show the whole group that the tip of your tongue is down behind your lower teeth. Place your hand on your diaphragm and push out with an explosive puff when producing the sound "kah." Ask the children to do this. They will laugh and enjoy this. Ask Mary to show the group how she makes the sound. Then the child who says "tat for cat" may show how he can make the new sound, just as all the other boys and girls do. In this way the child is taught the correct placement of the tongue which will eliminate a defect before it becomes a social problem and a reading handicap. One fourth grade boy told the speech correctionist as he visited his classroom that he would like to be able to talk better because then the boys on the playground would choose him to be "it" when they played "awee awee out's in pree" (alle alle out's in free). Wouldn't it have been a fine thing if that boy's first grade teacher had known what to say to him then? It really doesn't take a specialist to tell a child to start the "l" sound with the tongue up instead of down. Often one trial learning is sufficient. Naturally all teachers have not observed what the tongue and lips do when producing a given sound, but if there is no speech teacher in your system, take a mirror and study yourself when forming a certain sound. You will be surprised to learn how quickly you can help your children with the more obvious substitution of speech sounds. Don't stop with this feeble attempt, however, secure the services of a specialist for the more obscure and serious defects. Most all speech irregularities can be cleared away with careful and consistent ear training and a good pattern to imitate. Bear in mind that parents were not speech specialists when they first taught their children to talk.

Few of us realize what a great handicap a speech defect is to the reading program both from the standpoint of the child who has it and from the standpoint of the group of listeners. Consider the child who substitutes "d" for "g" (dough for go, wadon for wagon, pid for pig). If after he has learned to read, he comes upon a new word such as "beg", he will undoubtedly pronounce it "bed." There is confusion immediately in his own mind about both the meaning of the word and the mechanics of reading. Added to this is the confusion in the minds of the other children in the group who are listening. Many such substitutions cause the child to lose interest in reading and form an emotional block which conditions him against further attempt at reading. He is defeated before he has found joy and pleasure in reading.

After teaching initial sounds in words, introduce those with medial sounds such as in the case of "d" (window). Pronounce several words with medial "d" and ask the children to raise their hands each time they hear the sound. Then give one child a large ball to bounce when there is one word in a series which does not have the "d" sound in it, such as David, Donald, Ladder, Thursday, Run, Pudding, and etc. After the children have learned to listen and recognize sounds in many ways, give them an opportunity to dictate words with like sounds. Let them choose sides and suggest that each on one side think of a word. Then, those on the other side would

give in turn a word which would rhyme (pan-can, boat-goat). The teaching of final sounds will naturally follow the medial sound. By this time the children should be very quick to recognize and imitate the given sound. Take for example the sound of "l" (lamp, Roland, ball). Say to the children, "Now when you hear this sound (teacher makes the 'l' sound but does not name it), do anything you like to show me. Boys may whistle, clap your hands or stand quietly." As the children become familiar with sounds occurring initially, medially, and finally in a word, then they are ready to learn blends such as "pl", "bl", "th", "sk", and etc. It is wise to introduce this device last because by this time children should have had training on most all consonants and vowel sounds and will be able to hear both sounds in the blend. This will make it much easier to form the combined sounds. When concentrating on the "pl" blend, the teacher might suggest to the children to think of one thing with which they like to play as, I like to play marbles, I like to play school, or play house, etc. At the dinner table John says, "Please may I have some . . . ." Give each child an opportunity to ask for something using "please." These speaking situations do more than teach sound discrimination; they help the child to think clearly and to express himself in a few words. Many of our children have an onrush of ideas at this early age and are confused because they don't know which idea to express. Having just one thing to say at a time will help them to set the mind in order.

Here is another listening game which has always been very popular with school children. Teacher pronounces a word and the child next to her says a word that begins with the sound with which the teacher ended. Teacher says "lamp." Mary responds, "pony." Then the next child in the circle thinks of a new word and the child next to her carries on in the same way until each child has had a chance.

One last technique in speech education must not be overlooked. Through choral speaking in the early grades, children are taught to play with the sounds of our language. This can be done by using jingles for special sounds found in many fine choral speaking books. Each jingle has its own time and rhythm arising from its meaning and mood. Who of us doesn't recall playing "hot cross buns" with another child, making the final consonants crisp by clapping the hands and slapping the knees, something like a baby learns to play "patty-cake"? When learning a new poem the children will listen very attentively to the teacher read it not once but many times. This will stimulate the imagination of the children to see all the pictures the poet attempts to paint in words. If the teacher does this well, they will react sensitively to all the sounds, odors and emotions of the poem. Through acquaintance in a simply way with play jingles the children will develop an appreciation for real poetry later on. Usually with the development of appreciation comes the desire on the part of the children to act the part of the jumping frog or be the "little engine that could." This is an activity which releases tension and creates the proper bodily response and uninhibited expression, which is so fundamental to good speech.

In conclusion, an attempt had been made to show various procedures and techniques for teaching sound discrimination through exercises graded in difficulty. Ear training is the key word to remember whenever opportunities present themselves in the daily activities of the room. It should be noted

that many studies have been made on children having specific training in auditory and visual discrimination during the first month of grade one. The evidence is to the effect that those having training when compared to those not having it, have surpassed in reading rate and reading achievement. Helen Murphy, Assistant Professor of Education, Boston University School of Education, says that, "The most common difficulty among 'non-readers' in the reading clinics has been a lack in these areas."

## TRENDS IN AUDIO-VISUAL EDUCATION

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Learning and growth stand as the great pillars of peace and happiness in a world that socially has become quite small. Every educational force must be marshalled in order that we may survive. The invention of movable type printing in 1453 turned the darkness of the middle ages to light and brought freedom to all mankind. Now we turn to audio-visual tools as a means of bringing better understanding in the field of education.

Audio-visual materials help to clarify ideas, to strengthen abstractions, and to work with the minds of men everywhere to build the "good life for mankind." "From swords to ploughshares" is civilization's yearning cry.

In this report I will attempt to point the trends for motion pictures and all companion aids to the end that we may not be too late in bringing intellectual freedom to the world.

The preparation of eleven million men into a fighting team was a task of magnitude, one which revealed readily the importance of providing universal education for the youth of our country. Enormous training programs had to be established and youth trained in the shortest possible time. This necessitated the use of effective instructional procedures. The most significant development of this experience was the use of sound motion pictures, film-strips with sound film slides, lantern slides, recordings, charts, pictures, maps, diagrams, models, mock-ups, and other devices. Of course the emphasis was upon making the most effective use of these instructional tools.

### *Better Tools To Meet Specific Needs*

As we look ahead, I believe the greatest improvements will come in the development of better tools and clearer understanding of what each specific tool will do to meet the needs. May I suggest that the tools will not only develop more information but will also incorporate methods of retaining that information. The field trip to the City Hall may be the tool necessary to

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visual tools that exist in their school and of the new tools which are available. The paper tape sound recorder is an example of a tool that the teachers in the school will have to be trained to utilize.

The in-service training should be in the hands of audio-visual specialists that have become familiar with the tool. Those who use audio-visual materials not only must have certain technical information and skills but more particularly must know such things as: the types of audio-visual materials available; the sources from which each type may be obtained; the aspects of learning to which each type can contribute; the manner in which the material should be presented; the test and follow-up procedure which should be employed. Teachers should be encouraged to develop a certain degree of initiative and resourcefulness in the production of various kinds of sensory materials that are not yet available from commercial sources.

#### *More Competent Leaders Will Be Trained*

The directors of audio-visual education will be able to make a substantial contribution to the future of the program. If the leadership is based upon an understanding of the principles of democratic education, adequate educational preparation, broad experience, wise application, courage, and ability to do the things in which the leaders believe the future will be bright. There is much evidence that competent people will be available to colleges and school systems. It will be necessary for these audio-visual instructors to keep themselves acquainted with the latest methods and developments. Programs should be set up to bring national and international leadership together for the purpose of sharing information and experiences.

#### *Decentralization of Materials*

If the audio-visual program is to be successful sufficient funds must be set up to make it possible for teachers to obtain audio-visual materials at the time needed. This is a goal which it is necessary to attain if these materials are to take the place they deserve. Intensive use requires that the materials be placed as nearly as possible at the point of use. Many schools will have substantial depositories located in each building making the material available to individuals and small groups for reference and study purposes in much the same manner as libraries do today. Visual and auditory reference material will be available in sets on various subjects much as encyclopedias are today. Books and audio-visual materials will be correlated for certain *core* courses or units common to most curriculums. Textbooks will contain references to appropriate audio-visual materials.

Catalogues of materials will be a single page guide made by a central agency that will supply enough copies to add to all catalogues in all systems. Whenever a new film is circulated the new page-guide-catalogue will be provided simultaneously with the film. These catalogue-guides will be supplied for all visual materials. The deletion of a film and the catalogue-guide will be a similar operation.

Funds, equipment, and school buildings will all become adequate as the program is accepted. The budget allotment will be increased as the program progresses. Planning of school buildings to provide facilities such as darkening, ventilation, and seating arrangements will receive considera-

tion by architects. Equipment shortages will be less as the market changes from a sellers' market to a buyers' market.

### *Other New Developments*

In this summary of current trends it seems appropriate to make at least casual mention of a number of state-wide programs that have been announced to promote wider use of audio-visual materials.

The appropriation of \$1,112,530 by the Virginia legislature in 1945 represents one of the most extensive statewide efforts to encourage audio-visual education. These funds will be used not only for the purchase of equipment but also to establish film libraries at the state capitol and in each of the teachers' colleges.

In Nebraska a broad experimental program has been launched by the state university and the five teacher colleges for using sound motion pictures in the small rural high schools of the state. More than 100 schools are co-operating and careful evaluation of procedures and results will be attempted. Arizona and Indiana also have some special studies under way.

A different type of statewide activity that is peculiarly significant is that of FM (frequency modulation) broadcasting. As radio equipment becomes available schools should indicate with reasonable promptness, whether or not they want and are prepared to make effective use of the twenty channels now set aside for education.

Among the city school systems that have pioneered in this field are Cleveland, Chicago, New York, and San Francisco. Six educational FM stations were actually on the air October 15, 1946. Twenty-one stations were under construction, the applications of twenty-three educational agencies for FM licenses were pending imminent decision, and twenty-one additional applications had been filed. No less than thirty-five of the fifty-eight state universities are considering FM broadcasting. Wisconsin is farthest along with its program, two stations are under construction, plans have been made for the eventual development of at least five or possibly seven additional stations. Funds have been provided by the legislature to develop and operate the program. A widely representative state council is to administer the project. Other states worthy of special mention are Maryland's five station network, Virginia's plan for twelve FM stations, and the fifty-eight stations network proposed by Texas. Connecticut, Kentucky, Michigan, Ohio, Indiana, South Carolina and Louisiana are well under way with their plans.

Comparative newcomers in the field of audio-visual education which educators will watch with interest are: voice recording by means of a magnetized wire or tap; adaptations of micro-filming for school use; stereographic projection, and television. Already the voice recorder has won a place for itself in a few of the larger audio-visual programs.

The use of audio-visual materials is not an end in itself but rather one of the essential tools to be used in teaching. The best service that can be rendered to teachers, therefore, is provision of an abundant supply of varied and well selected materials, classified and distributed in such a way that they are always readily accessible as classroom needs arise.



gain the concrete experience rather than using books or pictures to get this abstract concept. It may be necessary to resort to animation to handle a difficult subject or to suggest methods of retaining information that must be learned. It may be the telecast that will bring us face to face with some great world leader as his message is brought to us at the same time. Timeliness is the great contribution of radio and television. Printed texts are dated from the day of their publication. They may be kept up to date by coordinating their use with radio and television. I believe every contribution of importance can be recorded for posterity and can be reheard by one or several individuals. This type of listening and observing will be near to the real experience and will carry with it much inspiration.

The chart, map, filmstrip, or other tool could make a similar contribution to the situation.

#### *Evaluation*

The contribution of the educational testing expert will add significance to the audio-visual movement. We know that we must determine statistically the shortest and best methods of "doing the job." Researchers of recent years have answered many questions concerning the effective use of educational tools. We know that when properly produced and wisely used the educational motion picture possesses distinct pedagogical values over and above traditional teaching methods.

Such men as U. C. Arnspiger, Edgar Dale, F. N. Freeman, P. J. Rulon, and other important educators performed scientifically controlled experiment and gave results that were statistically significant. These findings have given positive answers concerning the value of audio-visual tools.

#### *Teachers Will Become Better Trained in the Use of Audio-Visual Tools*

There are two aspects: Teacher training institutions and the in-service training program. Indications are that the teacher training institutions are beginning to offer courses throughout the nation. Many of the courses spend the student's time on the operation of equipment rather than the utilization of the material. Student crews will take care of this operation to lighten the load of the teacher and provide valuable experience for the student. Many aids will be forthcoming to help the teacher utilize audio-visual tools effectively.

The future will bring courses, units, and practical experiences into the teacher training curriculums. Some of the colleges will begin to use the materials in their own institutions as soon as the cost of production becomes less. Many teachers still do not make maximum use of the blackboard which is among the earliest of the audio-visual tools.

#### *In-Service Training*

Administrative and supervisory staffs will utilize audio-visual tools to strengthen their in-service training program for teachers. Occasionally a radio broadcasting studio will make available its facilities for school use. At the present time one of the largest broadcasting stations is permitting students of the Los Angeles Schools to participate in a nation-wide broadcast on current events. This is a tremendous step in the right direction.

Each system or school should acquaint its teachers with audio-visual materials and equipment on hand. Many teachers are unaware of the audio-

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## Psycho-Physical Factors Affecting Reading

### THE CHILD AND HIS "QUOTIENTS"

*Florence Mateer, Ph.D.  
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All of us at this conference are specialists. We have studied and worked to become better specialists, with the hope of serving children thereby. In doing this, however, it is very easy to so narrow our perspective that we are working, not with the child as an individual, but only with certain of his functions or aptitudes.

To a certain extent such specialization is necessary but somewhere in the daily contact with children, in school, in the community, at home, at play, there must be an integrating force, some person, some group of individuals, to whom the child is entity, an individual expression of being, not a progress grade in English, a delinquency problem on the playground, a candidate for double promotion or special class.

The child's reading involves his total experience, whether it be from parents, environment and travel or the group experiences of his school years. Our reading of him must be equally broad if it is to be of any service to him or to the community in which he lives.

We are fortunate, in a way, because many of the tests for measuring children, although intended to screen out his aptitude in just certain narrow fields, have been far wider than designed. One cannot measure intelligence without inferring that experience is also measured in an indirect fashion. Academic tests involve areas far wider than the topics they indicate. The integration of such factors are so closely woven together in the child that any response reveals many attributes or tendencies.

It has been my privilege to present brief reports of such specialized findings to this Reading Conference at two of its more recent meetings. Today I am anxious to try to present such findings in their relationship to the child as a personality, a functioning whole, with some indications of the importance that procedures so undertaken for the special help of his education formally presented may have upon his life in a larger, broader sense.

Data such as these are not easy to accumulate nor interpret. One does not find material easily accessible for such conclusions. No two individuals are ever born into the world with all factors equal. Even twins present a variable factor by the mere precedence of birth which may become the basis of many emotional disturbances and of family concessions. When we realize the innumerable variations beyond this that modify the experience of a child it is easy to recognize that gathering together a group of similar children with comparable handicaps who are available for similar care and therapy is an exceedingly difficult task. Maintaining contact with such a group, once established, is even more difficult. Illness, death, change in family circumstances, change of habitat, development of religious beliefs that modify procedures, the birth of other children into the family, dearth of family help may all change the pattern in extreme fashion.

Consider, for instance, a group of children who need visual aids. In a given school of 500 we might find 10 reading defect cases who had gone for help to an oculist in the same month, for such trips seem to come in groups especially at the beginning of the school year or mid-term. This group of ten children will vary in many ways, age, sex, size, nutrition, the amount of training that has been experienced outside the school, the type of training previously experienced in school. The histories will be highly individual in illnesses and accidents, in family inheritance, in economic privilege. The actual reading ability so far achieved will also vary from a possible none on symbol material to several grades of facility.

After they are equipped with glasses or are helped by vision-training the variation will be increased. Some will have minimal corrective help, others will be markedly aided. A few will be placed under special ocular training. One or two may have been found to need certain medication also.

It is not hard to see how difficult it is to do scientific study of such a group and generalize conclusions as to the efficacy of any one reading procedure or technique. Two of the ten may be comparable if we are fortunate and then, suddenly, the comparability may be modified, by illness, the impact of varying personalities in the reading situation, a new member of the reading group, illness, shock, accident, or even the loss of one of the pair by their moving to another city.

The gathering of a group of children for study in any complete psychological procedure is proportionately much more difficult. It takes just one deterrent experience to make a child vary markedly from the group with whom he has been compared. It takes just a few weeks of parental neglect to upset a whole decade of observation, especially if they conceal their defection. This is most significantly important where one is dealing with a child under corrective medication as well as corrective handling in school.

Out of a hundred children who ask for clinic help and advice on behavior and academic problems approximately half become indifferent within a year, despite any and all efforts to maintain their cooperation. Out of the other 50 there are usually ten or twelve who yield very readily to suggested procedures. The other 35 to 40 are the group with whom one must work for true experimental findings. When the hopeless are eliminated, there may be fifteen or twenty left. This is an adequate group for study but there is an additional standard which makes this a very poor chance for group study and adequate findings at some later date.

From the educational and the psychological viewpoints we have no right to claim that a certain procedure has been successful just because the child has "passed" or "made normal progress."

If we are interested in the child our goal must be a child who maintains the gain he has made and goes on towards adult years with continued utilization of the habits and skills he has obtained through our work. This is not a thing that can be determined in a single year nor in two, nor in three. Sometimes it takes eight years, ten, the reaching of maturity, the holding of a job, the test of maintaining himself as a self-directed adult without any evidence of handicap from the difficulty with which we dealt many years before. Only such a concept can have permanent value for the individual and for the race. The application of such a concept shows us at once

how futile and inexact it is to attempt to categorize an individual by some one measurement and place him safely in his own little niche for life. Humanity is not static; change and adaptation as well as learning are inherent in the normal everyday life of all people who can be socially adequate.

If one studies children from this aspect, it is not difficult to see that there is no special handicap in one field of learning which does not seem to have a definite effect upon other aspects. Perhaps a child is thoroughly competent except for printed word reading. He can not help having some emotional response to his reading difficulty. Nor does he usually have such an extremely restricted handicap. Full study will usually show modifications of his ability in social maturity, in intelligence level, in personality.

In similar fashion, observation will show the gradual solution of these varied handicaps as the major problem, whatever it may be, is reduced or even eliminated.

Of course, if one believes that an intelligence quotient, or an educational quotient, or a social quotient is an incontrovertible and permanent indicant of the individual's ability, then no such study of variability is even permissible. But, if one accepts the concept that any quotient is merely the best measurement available of what a given child can do at a given age, under standard conditions, with a standard and uniform presentation of the demands made upon him, then there is always the possibility of studying him and furthering his better adaptation at a later time. With this concept it is possible to see that many children vary from time to time in the ratios they bear to the elusive, so-called "normal" individual.

One must, also, add a corollary to this concept. All statistical studies accept variants from the mean, the median, the modes of any given attribute. Such variants form the extremes who are so hard to interpret into general trends. Statistically, there are relatively few such extreme cases in any field of study, but, clinically, any child may be such an extreme. Moreover, there is no rule which enables us to determine which child is a variant. We must treat each individual as though he may be a variant and, seeking for the cause of his variability, try to adapt techniques to his help so that he may function within the range of acceptability.

There are many factors which modify a child's rating on standard and acceptable rating scales. Some of these factors can be eliminated or decreased in the handicapping value which they hold for a given child.

The medical profession have accepted the concept of the remedial effect of thyroid for a period far greater than that covered by psychological testing. Many of the studies are of little value to us today because we have no clinical measure by which to change an estimated gain into a comparable numerical concept. Cretins with no teeth or hair, not even walking at two years *do* gain and develop under thyroid. Milder cases evidently correct completely and satisfactorily. Our psychological and educational studies of these milder forms of the handicap are more recent but they show surprising and hopeful changes of such children under medication.

A simple thyroid deficiency case with which I had the pleasure of working recently will illustrate this type of modern miracle. Elise was brought by her father for examination because she had proven "absolutely inadequate" in kindergarten and could not be approved for first grade work in the fall. At that time she was 5 years 5 months of age. She was shy,

fearful, slow responding, needed constant reassurance, yet was reported adequately competent in self-care at home. On intelligence scales she rated only 3 years 0 months. Her drawings were the large scrawls of a two year old. Her Social Maturity test rated her 5 years 0 months. Performance tests gave her a rating of 4 years, for although she was adequate she was very slow.

After 4 months of competent medication, with no training save the usual play of a child at home during the summer, she was again examined on the alternate series and scored a mental age of 4 years 4 months. Her test procedures were all acceptable through the four year level although drawings were still relatively her poorest work. The social maturity showed no change. The performance level was 5 years 2 months. At this time she was taken into our small group of pre-first grade children for further help on the continued apprehension and shyness. Her adjustment was remarkable. In a week she was the leader of the group. In two weeks she was becoming interested in the activities of more advanced groups and talking freely and spontaneously. She accepted new responsibilities of self-care and self-direction. She came in without her father, waving him a good-bye at the car door. Another week and she came in the taxi with other children, asking it as a privilege.

By November she seemed to be a competent member of our first grade. Re-rating her showed a mental age of 5 years 11 months at her sixth birthday. By this time the suggestion had been built up that she would probably like to visit the first grade room at her own school for a day, since she had had a little friend visit her at our school and could thus see his work and school. The visiting idea was to leave her a safe retreat to our group if she were emotionally unable to make the adaptation, but the visit merely gave her great pleasure and the transfer was permanent.

Elise's social maturity quotient at that time was 110, her performance test quotient 108, her Goodenough 114, Binet 99, and reading readiness slightly above average. Reports through the year have remained satisfactory but we shall not drop her from clinical scrutiny for some years to come.

Not all low thyroid cases correct so adequately and so quickly. Sometimes the gain is slow, irregular, and educational work is markedly handicapped for several years. Sometimes social maturity remains inadequate for the whole period of childhood. A great deal depends upon persistence in medication, the attitude of the family, the understanding attitude of teachers.

The reverse side of the picture is one a physician or a psychologist would never suggest determining,—that is, the question of retention or loss of gain if medication were stopped prematurely. Unfortunately all too many parents try this for themselves and in general the indications are that after a child has gained on thyroid and is prematurely made to continue without it, the loss is rapid and re-gaining the earlier ability is far more difficult than upon the original initiation of such help.

The easiest group to work with from the standpoint of promoting change in efficiencies and abilities is the calcium deficient group. They are usually one of the more difficult so far as dealing with them goes before correction is well-established.

The so-called calcium deficiency is a very intricate thing. It may vary from the simple need for more milk or sunshine, or more vitamin D, to an



actual parathyroid deficiency. It may be related to inadequacy of the pituitary or thyroid gland. It may be part of a delayed or accelerated skeletal maturation. It has an intricate relationship with phosphorus nutrition as well.

The behavior of children suffering from such deficiency is usually far more of a problem than their academic standing. The calcium deficient child is restless, irritable, negative, noisy, talkative, fidgety, inattentive, or even cruel and destructive. He delights in argument. He may have tantrums. He is usually involved in fights on the playground. He relieves his physical irritability by raucous yells and whoops.

He is clumsy, awkward and unpredictable. He either writes very poorly, almost illegibly, or else very slowly. His work is usually a good illustration of his problem. His academic accomplishment suffers, *not* because he is lacking in intelligence, but because he cannot attend consistently to what is happening and so does not grasp the consecutive patterning of his subject matter.

His quotients, be they of intelligence, social response, or education, are consequently affected. His learning suffers from lacunae and the missing content is necessary if he is to build a consistent higher educational accomplishment.

Since remedial work means more a filling in of these vacant areas than the need of complete rebuilding from the foundation of a very low grade, correction is usually very rapid and quotient gains of an almost unbelievable value come quickly once the proper nutritive, medical and social programs have been started. It is quite possible for such a child to make up deficiencies in two or three grades in a school year and continue accelerated progress a second and even a third year.

Every year brings more light upon factors that modify ability and increase general efficiency. Prostigmin bromide releases some of the pent-up intelligence of cerebral palsy cases and helps them express themselves with greater ease, better speech, more adequate self-realization.

Pituitary, insulin, suprarenal cortex, gonadal preparations have their place in this ever increasing effort to help individuals overcome their own inadequacies and realize themselves more fully.

The newest therapy, glutamic acid, comes with the cautionary report that IQ's so raised may not stay that way when medication ceases. My own first cases, under medication (by parental demand because of the newspaper publicity which this research has had), show no gain so far, a matter of three or four months. This may be because they are children who have already had all that can be done through glandular therapy, the aminiods, and corrective education.

Similar changes happen in children who have their first true picture of the world around them when fitted with lenses after three, five or more years of inadequate vision. The solitary fearful, awkward child becomes social and inquisitive, walks without falling over furniture and is no longer criticized for impolitely passing people on the street without greeting them, when they have actually not been within the field of his adequate vision.

The most fascinating cases are usually highly involved and have many factors that enter into the whole picture. Bruce is such a child. It has taken a long period of study and attention from many angles with many people

cooperating to bring his present level of social adjustment.

When he was first studied at a month past his fourth birthday the family had accepted him as a deaf child,—because he would not talk. They admitted he heard sounds but probably could not differentiate them. This did not worry them as much as his behavior which was non-cooperative, erratic, violent and even destructive. Many traits such as paper twirling, and string winding were a common part of his behavior and made him seem entirely too much like abnormal defectives to be pleasant.

He ate erratically, was not fully toilet trained and could not be trusted to play without running away. His intelligence rating on the Minnesota Scale was 33. His educational quotient as measured by our Merryheart Scale for nursery and kindergarten was 23. His social quotient was 75 because he could do many of the self-care skills. His performance test quotients were 28.

This child had the shock of many therapeutic situations being begun at one and the same time. He was placed in a boarding home with a teacher skilled with small people. He entered nursery training, he had play periods with kindergarten children. He began medical therapy which included calcium, iodine and thyroid.

As you may see from the accompanying chart gain was rapid during even the first eight months. After that the family attitude demanded for him a period at home which was most disastrous. He returned before they planned because they "could not handle him any longer." Tantrums, mother dependency, loss of his few words of speech, loss of weight, all were present. It took just a short time to reestablish his earlier ability but the price paid by Bruce was enough to educate his family to the need for better understanding of and fuller cooperation with the methods by which he must be helped.

From that time on there were no setbacks. Speech comprehension was fully adequate by six years but he was seven before his own spontaneous speech came anywhere near meeting his desire for expression.

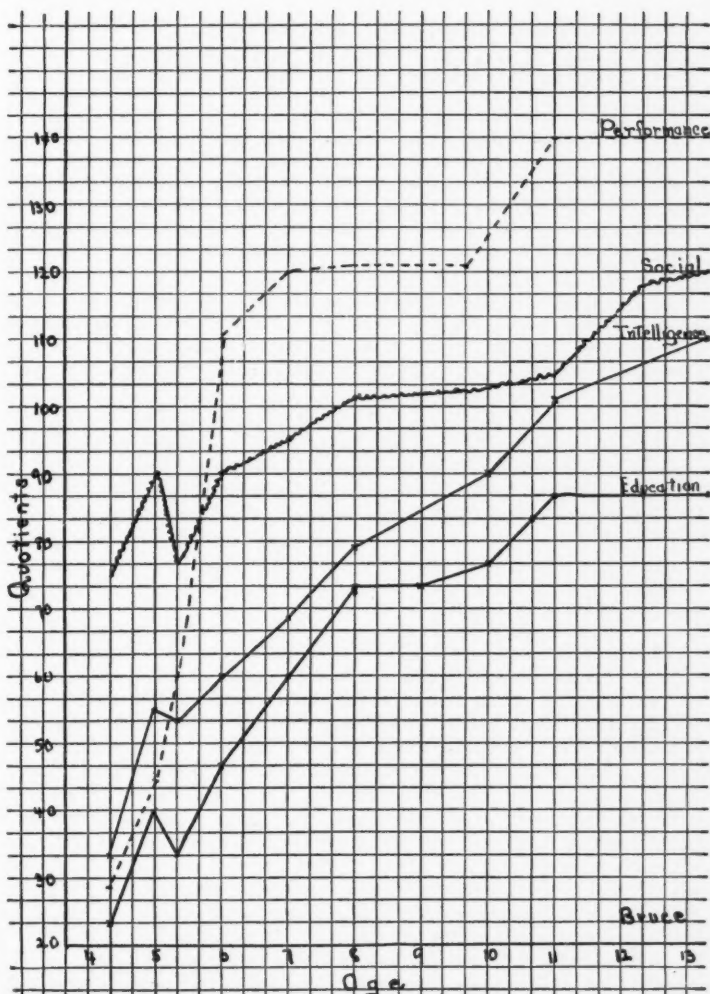
Drawing was a tremendous help in expression from the age of 5 years 3 months on. He preferred it to any type of work with paints or colors.

At eight he was transferred to his home school system. The first year brought little gain in actual school level academically but it did bring improvement in all other patterns of development. This was to be expected. His learning was directed to new social patterns.

Bruce's educational quotient is now below average. This is probably due to the fact that he was in a junior trade school and is now in an intermediate school of the same type. Academic work such as our tests measure are only a part of his training. His skill in trade performance is indicated by his steady advancement and his present adult performance level on all tests we can give him.

He takes all care of his person and of his own belongings. He is precise, painstaking, alert and aggressive. He is socially well-oriented and has more than earned his own spending money for two years. He does very well in mathematics, his hand work, writing, English papers are exquisitely and intelligently done. He adores his brothers and sisters and is a cooperative member of the family, a Scout, a good athlete and an individual never at a loss for occupation. He still has some slight hesitancy in speech. Since his





speech age is so much less than his actual age we are not unduly alarmed by this but he is getting help nevertheless.

Whether this boy will be an adequate adult is still a matter for the future to tell us. His change in Quotients represents a persistent program of cooperation between doctors, teachers, family and friends, as well as special teachers and two psychologists. His story is simply an illustration of what may sometimes be done when one reads beyond the quotients to the child and attempts to help him.

## COMPULSIVE READING AND ITS PSYCHIATRIC SIGNIFICANCE

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Almost everything an individual does and says is an expression of some aspect of his psychological makeup, and the reading habits of some people are no exception. Today, I should like to call to your attention a type of reading habit which is compulsive in character and is therefore of psychiatric significance.

A compulsion is the excessive, apparently unwarranted, purposeless repetition of a rather innocuous or trivial act. It is always accompanied by the obsessive feeling that the act is not performed sufficiently well—hence the compulsion to repeat it. It is also characterized by the fact that while the individual is rather uncomfortable during the performance, he becomes decidedly worse if he has to interrupt it. For example, a woman will wash and rinse her hair repeatedly to the point of exhaustion, each time feeling that it isn't quite clean. If made to stop during the process, she is quite likely to develop discomfort or even anxiety. Most compulsions are repetitions of some widely accepted, simple, useful act, the psychological meaning and purpose of which can only be elicited through psychiatric study.

Much has been written about the neurophysiology and neuropathology of reading, and those of you professionally occupied with this subject undoubtedly know more about it than does the average psychiatrist. What has not been sufficiently appreciated is the psychiatric significance of two aspects of the reading habit, namely, the amount of reading and the choice of subject matter, both of which in certain individuals reach the intensity and specificity of an obsessive-compulsive phenomena. There are many devices in our culture which, in addition to their life-promoting function, lend themselves well to the expression of man's innermost urges and conflicts. Reading is particularly suitable for this because of the abundance, variety and availability of reading matter; because it is a cultural device mastered by the majority of the people; because, by its very wide acceptance as a commonplace technique, it is above suspicion, and thus it can be practiced everywhere and at any time. With public libraries and lending libraries everywhere, it is more convenient and cheaper than other ways of expressing personality conflicts, such as drinking and gambling, which are also compulsive in nature. So it is not surprising to the psychiatrist to find that a considerable number of people who have personality problems have the uncontrollable impulse to read excessively, intensively and exhaustively. They literally devour reading matter; on the streetcar, at mealtime and in the bathroom, they feel the urge to finish their current interest only to find in the end an unsatisfying emptiness which compels them to go on to the next book or magazine. We shall examine some of the outstanding motives behind this compulsive type of reading:

1. *The Excessive Thirst for Knowledge:* We live in a world of changing facts and figures, of conflicting customs, traditions, values and attitudes, the knowledge of which is an essential aspect of our culture. Knowledge is

today a cultural imperative; furthermore, it has become an instrument of survival plus; it gives security, prestige, position and power. Thus reading as a means to knowledge even supersedes experience, which is slow, limited and time-consuming. There are persons who, because of a strong sense of insecurity, seek in the acquisition of knowledge the answer to everything and thus come to use knowledge, not as a means to an end but ultimately as an end in itself. These people read so much per day or per week on everything about a given subject. If they have to interrupt the pursuit of knowledge for a period of weeks, they become uneasy as if they are losing out on something. Of course, knowledge to be useful must fit reasonably into a scheme of things, into a workable concept of life and the world in which we live and in which we feel satisfied and secure. Additional knowledge breaks down this complacency, leads to research and further acquisition of knowledge, and in due time to the formulation of a new and broader scheme of things. The average individual can hardly acquire, digest and integrate into a meaningful whole all the knowledge there is; this is the task for a philosopher, and mere mortals are hardly big enough for the task. In his search for knowledge, this type of person reaches a state of confusion and chaos. When he doesn't find the answer in one field, he shifts to another. He has a veritable encyclopedic mind; you can see him hanging around public libraries. The more he reads, the more imperative he finds it to go on, and the less satisfying; so he keeps on reading in a compulsive, irresistible way.

2. *The Frantic Quest for Pleasure*: Man is said to be a pleasure-seeking animal; while all pain is life threatening and all animals seek to avoid it, man alone has conceived of an ideal life of contentment and pleasure. From time to time this has crystallized into philosophies of hedonism which consider pleasure as the ultimate goal in life. Of course, life to be tolerable must attain a balance of pleasure and pain; but with the increased complexity of life and because of increasing frustrations and disappointments, this is often difficult to attain; and so men have come to seek actively and provide purposely for a certain amount of pleasure in their lives. In extreme cases some individuals become pleasure-bound, and this too is reflected in their reading habits. While much humorous literature is read for "relaxation," for the more ravenous pleasure seeker there has been created a whole market of joke books, and writers have specialized in "funny stuff." Above the pleasure-giving devices stand love and sex, and a great deal of literature is written in this field, some of it so offending that it can only be printed privately. The reading of this sort of literature represents a substitute gratification for that which some people do not feel prepared to indulge in in real life. Many classical romances have been carried on exclusively through copious and much quoted correspondence. Besides deriving some sort of gratification from the story itself, many feel that this is a way to learn about love-making. The more they learn, the more they seem to be impressed with the magnitude of the task, and the less adequate they feel to it. So they read on—again the same incessant, unsatisfying, voracious reading.

3. *Reading and the Aggressive Impulses*: Modern life is frustrating and, because of our discontentment with civilization, we all develop a certain amount of aggression against everything and anything. This, however, must

be kept in check, and society has provided acceptable methods for its unleashing, such as athletic contests. A substitute gratification of this feeling is also sought in the reading of crime literature by certain individuals with strong aggressive feelings who for obvious reasons cannot vent their aggression; with them, reading of crime literature, actual or fictitious, again reaches excessive proportions. The prominence given in newspapers and the volume of pulp literature of this sort are indicative of the extensive prevalence of aggressive feelings in the lives of many. There are people who can hardly wait for the next issue of a "thriller"; there are people who own whole libraries of murder mysteries. To a certain extent, the habit may have beneficial effect, since we find that these addicts to crime literature are often quite calm in their everyday lives.

4. *The Return to the Primitive*: Another indication of the burden of civilization is the craving to return to the primitive—to the past. At least in our country, the preoccupation with frontier days, with the simple life of the West and the cowboy, is manifested in the voluminous literature of western stories. This sort of reading also appeals to men who suffer with a sense of masculine inadequacy, since these stories usually idealize the masculine virtues of strength and courage. Cowboy stories are almost exclusively the domain of weak men and strong women. Here again we find many people who read copiously and exclusively literature of this sort.

5. *Civilization and Guilt*: Our civilization is conducive to much personal, intra-psychic conflict with the resultant widespread feeling of guilt and a vague notion that through suffering such guilt can be expiated. This need is very strong in some people, and they seem to appease it by the relishing of much tragic, morbid literature. One expression of this need is seen in those who go to every movie or play from which they can get a good cry—the so-called "tear jerker" performances.

We have then five major problems created by our civilization: the need for knowledge and pleasure, the craving for the return to the primitive, the feelings of hate and guilt with the resultant need to suffer; and all seem to find expression in the quantity and the choice of reading matter of some individuals. In our work with psychiatric patients, this excessive type of reading is quite prevalent. It is always possessing, inescapable, and never satisfying. It is usually an expression of a deeper and larger personality problem; in other words, it is a symptom. It seldom implies the presence of a mental disease but always the presence of some personality difficulty. The subject of choice is almost specific of the patient's problem, or, as we say, it is pathognomonic; and the extent to which such an individual reads is probably proportionate to the severity of his problem. Such reading may have a slight curative value in giving the patient a sense of unity and belongingness with others like him. Books like "How to Win Friends and Influence People" or "Life Begins at Forty" have their place in psychiatry, and we speak of this aspect of treatment as bibliotherapy; but it is very questionable whether the compulsive type of reading described here, like any other compulsion, has any deep therapeutic effect on the sufferer. For instance, while the reading of crime literature may appease some aggression in the sense that the more we think about doing something, the less we are

likely to do it, it does not eliminate the source of that aggression, which must necessarily be done if a real cure is to be achieved.

While the prevalence of compulsive reading is familiar to many, it seemed useful to point out to those of you who are professionally concerned the clinical significance of this specific type of reading habit.

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## WE, THE PEOPLE! OUR HEALTH AND WELFARE

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It is a stimulating privilege to participate in this Reading Conference and to think with you of the social changes which are so rapidly moving our sights in the realm of health and well-being. It is easy to realize how closely our home community problems in health are allied to those of human beings around the world—hungry, ill and disheartened peoples cannot effectively cooperate for a world peace. World understanding is dependent upon an understanding of community relationships. In no area is this as clearly evident as in that of health.

Our nation has to the best of its ability provided for the physical and health needs of the war-impooverished countries as one of the first steps in rehabilitation. America has always been a nation of many peoples—it has also been a nation of rapid social change. The tempo of social change was immeasurably increased by the war and its aftermath. We are faced by the rapid growth of villages, towns and metropolitan areas. Family groups from rural sections of the middle and southeastern states have suddenly been transplanted to the far west and southwest. Families from rural communities have moved into urban centers.

Physical illness and mental breakdown due to family dislocation and disruption of home, malnutrition, inadequate education and poor housing have all taken their toll. Racial tensions augmented by the strains of war and the unsettled post-war period, as well as by the insecurity and uncertainty as to the future or even the possibility of unemployment are all elements making for instability and poor mental health. Without the unity and security of wholesome and satisfying experiences at home, it is difficult for the individual to adjust to society. Our entire civilization is founded on a stable family life. Too many factors are working against that stability. The welfare of all of the people is the concern of all of the people. This realization brings us to the necessity for improved community organization.

Basic community services have been defined by a Committee of Consultants on Community Reorganization<sup>1</sup> on the basis of minimal education, health, welfare and recreational facilities and services required in every community to meet the basic needs of all its people regardless of economic status, race, creed or national origin, as follows:

1. Educational facilities of standard quality for children and adults organized in accordance with individual needs, interests and capacities and closely related to the economic and social life of the community.
2. Family counselling and adjustment services and provisions for insuring the economic security of the family.
3. Services and care for children in their own homes and provisions whereby substitute homes or institution care may be provided when necessary.
4. Mental hygiene clinics for children and adults.
5. Adequate children's Court and detention facilities.
6. Provisions for the care of children of working mothers and adequate standards in child labor laws and full enforcement of such laws.
7. Recreation facilities and leadership for children, youth, and adults.
8. Vocational guidance service for children and youth and counselling for adults.
9. Employment services for youth and adults.
10. Provisions for adequate care, adjustment and recreation for the aged.
11. A community health program designed to provide both preventive care and treatment for adults and children of all ages and economic status including hospitals and outpatient clinics.
12. Adequate and well trained personnel in education, health, welfare and recreation.

Our particular concern is with community health and the place of the school in the reshaping of our community life to make it as good as it can be from the point of view of health and well-being.

Health in the school must depend upon a well-organized community health program. Responsibility for the health of a people has been vested first in themselves, and next through their directive in governmental agencies, such as local, state and federal health departments. The voluntary health organizations such as the National Tuberculosis Association or Crippled Children's Society or any one of the great number of agencies giving specialized health services have done and are doing a good piece of education work. They often serve to make the community conscious of an unrecognized need; and serve well where governmental funds are not available or where some segment of the population cannot be adequately cared for by existing community organization.

Health Education, to be effective, should be directed at the development of traits that make right ways of acting possible. This development will be made possible only by the realization of the importance of the atti-



tudes of the learner. Self-impulsion to desirable health practices depend upon the development of interests, ideals and positive attitudes toward health. In order to develop such interest and practices the individual must have the ability to solve his own health problems, which involves wise selection of medical advice. He should develop the ability to think through the relationships involved in his particular health problem. He should be able to make wise judgments in carrying out health practices, should be able to meet new situations and to act according to his own individual needs. The attitudes desired often involve changing basic behavior patterns.

The health status of any individual or of any community depends upon the development of good health practices. Good health behavior patterns such as meeting the desirable nutritional needs of the individual or his attainment of sleep, rest and recreation are as important to the health of that person as is the attainment of necessary environmental sanitation standards in the community in which he lives or the availability of good medical service.

Upon these two factors: First, the fact that our health depends upon what we do (our daily health practices) and, second, the fact that the formation of most of these habit patterns is a product of the behavior of the home and family, rests the convincing argument for home and school cooperation in health education.

The school may establish workable policies of (1) healthful school living conditions, (2) appropriate health and safety instruction, (3) adequate or superior services for health protection and improvement, (4) healthful physical education, and, (5) teachers and other school personnel with up-to-date preparation so that they are well qualified for their special health responsibilities, yet fail to change the health behavior of the child.

It is in the field of community health, of close contacts with the home and of actually learning how to live healthfully that the school in its health program has its real challenge. The concept that successful daily living constitutes education, requires that the school have a place in the community that differs markedly from the place that it occupies when education is conceived mainly as the acquisition of academic information and skills.

The school in carrying out its educational function of the guidance of pupils in living richly and usefully in their social order has a responsibility for directing the health practices of the pupils within the classroom but also for guiding their activities about the school, in the home, and in the community.

Since it has the pupils but a small proportion of their time, and since many of the activities are far removed from school premises, it is obvious that the school cannot guide the performance of day-by-day living unaided. Parents have the primary responsibility for the education of their children and, more than any other persons, have objectives in common with the school regarding living and learning. Heads of recreational, religious, civic, social, and industrial organizations control factors involving pupils living in the community. The school stands very definitely in need of the cooperation of the home and other community agencies.

The school, then, must be an integral part of the community, thoroughly integrated with community life, and working in partnership with community members and agencies. It is the focus of educational activity



of the community, guiding children and youth in the good life with the active assistance of parents and community leaders.

This concept of understanding and using to their fullest extent community relationships calls for close coordination of the efforts of all of the agencies charged with the health and welfare of the community. The public health or governmental agencies have accepted the responsibility for health education. Their recognition of the importance of education of all groups is shown by the strengthening role of health education in our state, local and federal health departments. Many voluntary health agencies have employed trained health educators in their effort to improve health concepts and practices as related to their particular specialized interest. Their technique is admirably illustrated in the case finding and control programs of the tuberculosis association.

Effective school health programs are increasing in number. Cooperative planning by the home, the governmental agencies, the voluntary health organizations, and the schools of any community would bring surprising progress. In very few communities are the relationship between health and welfare services clearly defined either in concept or administration. Consequently, full and effective coordination is seldom found. The child, when placed at the center, provides a sound basis for coordination.

The most natural and immediate contact in behalf of the welfare of the child is that made with the home and the parents. The needs of the child which may be met through education bring into sharp focus the interrelationships of the home and social group to which he belongs. For the child, the basic social institution is the family. Earlier in this discussion, the relationship of the stability of family life and its importance was brought out. Efforts should be made to counteract the forces working against that stability.

Parents have the primary responsibility for the health of their children. Schools cannot alone enable children to attain the desirable goals of individual and community health.<sup>2</sup>

Physicians, dentists, nurses, health officers, social and welfare workers and their official organizations, such as medical, dental and nursing societies, health departments, voluntary health agencies and social agencies are all rightfully concerned with health activities in their communities.

Cooperation is the keynote essential to the coordination of the efforts of all concerned with child health. School health policies must be formulated to achieve the maximum cooperation and coordination within each school and each school system and between each school and community.

Each school should establish its own health council. In a one-room rural school it might consist only of the teacher, one interested parent and one representative of the health professions, a local physician or a county health nurse. In a large metropolitan school it might be made up of a great number of members including the principal, a physician, a dentist, a nurse, the health educator, health counselor or health coordinator, teachers, members of the guidance staff, a nutritionist, the head janitor, student representative, parents and liaison representatives from official and/or voluntary health organizations.

Every school system should have a central health committee representing all schools and all groups interested in school health. Schools should

work with community health councils whenever they are established. Through the cooperative efforts of the many professional and civic groups represented in a community health council, ways can and should be found to provide for the specific health needs of all children. From the point of view of education in the schools, the primary functions of protection of children from handicaps and the organization of children in activities which give growth and development according to standards are our first objectives.

Protection of the child's health during his school life requires a thoroughly sanitary environment from the physical standpoint, an environment which protects and promotes his mental and emotional health. Good health also depends on a properly ordered curriculum and particularly on the mental hygiene of the teachers, competent and realistic health instruction in the classroom, a program of physical education designed to promote the potentialities of his personality and full social participation, and, finally, medical and nursing services for the discovery and correction of physical defects.

The HARPER'S MAGAZINE for May, 1947, has a report of an "Experiment in Health" written by Mary B. Palmer which is well worth reading. It is the story of the Peckham experiment in London, England. Peckham was chosen as an average English community. The people who live there are neither rich nor poor. They are sturdy and self-reliant. Their health, by usual standards, is considered reasonably good.

Two English biologists, Dr. G. Scott Williamson and Dr. Innes H. Pearce, are devoting themselves to a life-long study of health. They believe that health has positive qualities beyond the mere absence of disease. Their research led them into the fields usually reserved for the sociologist and the psychologist. They soon found that health was so unusual a species that they had to devise an environment in which it could grow. The result was the Pioneer Health Center—part laboratory, part family club—which was established ten years ago in the south London district of Peckham.

The article highlights a practical and functioning type of community organization which effectively attains the objectives outlined in our philosophy of school and community health.

The Pioneer Health Center is designed to accommodate two thousand families in their leisure hours. Members join not as individuals but as families. To be eligible, they must live within a mile of the building or "the range of a woman with a pram." They pay a small fee (about forty cents per week per family) and agree to undergo a yearly health overhaul. There is no imposition; rather, it is one of the main attractions since it means that members get free medical information upon which they may act or not as they please.

Two unique elements in this experiment are their emphasis on the family unit and the all-inclusive recreational program. On joining the Peckham Health Center each member undergoes a thorough health overhaul. After that, the whole family comes together for a joint consultation. When the youngest child has been discussed, he leaves the room, then the next ones in order of their age, until the parents are alone. These frank discussions give the family a feeling of unity and often relieve misunderstanding. They appreciate the fact that they are not given advice but information. If they want treatment, they go to recommended doctors outside.

The recreational and social benefits of the center and their combination of health overhauls are most successful. A meeting place for people of all ages, and the emphasis on the family, makes Peckham Center a unique experiment. The improved health rate and changed attitudes toward family living are the results.

An analysis of the needs for such a health center before the war and in this post-war world shows that the need is now greater for everything the center offers. It has proved that the deficiencies of modern urban life—not only in terms of health but in terms of happiness, too—can largely be offset by an institution which gives people the practical and psychological advantages of belonging to a community.

Our custom of innumerable private and public agencies and of dealing separately with the various problems of the community and with the various age groups is a striking contrast to the organization of the center in London. The increased cost, the inefficiency and overlapping of effort with inter-group misunderstandings and bickering are all elements which we could well eliminate.

California has many good examples of effective programs of school health and efforts at coordination of all agencies having to do with the health and welfare of communities yet much is still to be accomplished.

Briefly, the following statement presents a plan of improving the community and school health programs of the state.

## THE CALIFORNIA COMMUNITY HEALTH EDUCATION PROJECT

### *Nature of the Community Health Problem in the State of California*

The improvement of the health of the people of California is a problem of great magnitude, which concerns many individuals and many agencies. Basic to such improvement is the need for education. First, education of the individual so that he may intelligently direct his own health behavior; and secondly, education of the group to provide better environmental conditions, better preventive health service, better medical and dental care. The school stands in a strategic relationship to each of these educational programs. Health guidance and health instruction of the individual are basic in the educational process and all schools should be concerned with such guidance and instruction. Educational leadership in the community can be directed toward group health improvement, in cooperation with other governmental and private agencies. To help schools to make progress toward the achievement of these goals is a worthy objective.

Some of the problems in California, which need solution in order for schools to assume such leadership are:

- (1) Better understanding and insight of teachers and administrators in principles and programs of health education. This involves both pre-service and in-service training programs.
- (2) Better understanding and insight of public health personnel in principles and procedures in school health with special reference to the education implications of such procedures. This involves both pre-service and in-service training programs.

- (3) More adequate understanding of the techniques of cooperative planning and action between public health, private agency and school personnel, and a willingness on their part to employ such techniques.
- (4) Better integration of school health education into the total community health program.
- (5) More opportunities for school children to participate in functional health education experiences in the school and community.

In addition to these more direct approaches, there are related areas of action to which schools may contribute. The improvement of the quality and quantity of public health services in the state is a primary concern of state and local health agencies. Schools can influence community action for public health improvement through education, through cooperative planning and action, and through positive support. In areas where local health leadership and services are inadequate, schools should assume active leadership in organizing community resources and assist other agencies in a community health education program directed toward the improvement of public health services.

#### *Cooperative Efforts at the State Level in School and Community Health Education*

##### 1. What has been done:

- a. A joint statement regarding the school health education program was formulated and signed on October 30, 1944, by the late Walter F. Dexter, State Superintendent of Public Instruction, and Wilton L. Halverson, M. D., State Director of Public Health. The statement follows:

"Realizing their joint responsibility for the protection and promotion of the school children of California, the State Department of Education and the State Department of Public Health are desirous of developing a coordinated school health education program on both state and local levels. Planning of the program shall be the joint responsibility of the two departments.

"The State Department of Education agrees to inform the school administrators and teachers of the existence of the school health education service in the State Department of Public Health and to recommend to them that they take advantage of it in improving their health education program."

- b. The establishment of a joint committee on school health, with six members from each department appointed by the State Superintendent of Public Instruction and the State Director of Public Health. The functions of this committee are to establish state school health policies and to develop materials which will be useful in local areas and to further coordinate the activities of the two departments.

#### *State's Proposal to Use Activities of the Project as a Spring Board for More Extended Efforts Throughout the State*

Through the funds made available by the W. K. Kellogg Foundation grant, the Project was able to focus the attention of the school adminis-

trators, teachers, public health personnel, and community leaders, on apparent needs in school and community health.

It is highly desirable to utilize these experiences of the project and to expand them into other sections of the State, in an effort to improve school and community health programs.

1. In-Service Needs:

- (a) The project has shown the need for in-service training of teachers, public health personnel and some effective methods of accomplishing this objective.
- (b) The fact that teachers need to become better acquainted with their community and need to have a better realization of the function of the school in community health programs has been made more apparent.
- (c) The Project has emphasized the need for cooperative efforts on the part of the schools, health departments, non-official and voluntary agencies and community leaders to solve school and community health problems. This need has further shown the necessity for consultant service from the college, state and local health departments, state and local school departments and other resources.

2. Pre-Service Training Needs:

(a) Pre-Service Education Programs for Teachers:

1. The need for more opportunities to participate in functional health education experiences in the pre-service education programs for teachers has been evidenced.
2. The need for each accredited teacher education institution to present every student preparing for a teacher's credential with a comprehensive point of view in regard to school and community health education has been recognized. Such a point of view should stimulate within each prospective teacher a desire to more adequately prepare himself to make his own individual contribution to the health program of the school in which he is to teach.
3. A need for a more practical background of science education has been shown. This should include basic knowledge of chemistry, biology, anatomy, physiology, bacteriology and psychology to give each prospective teacher an understanding of personal and community hygiene, together with a better understanding of the part adequate nutrition programs play in human growth and development.
4. A need for understanding the psychological, physiological and sociological basis for the improvement of human health has been evidenced.
5. The need for teachers to understand the importance of health in the solution of social problems.

3. Proposed Way of Meeting these Needs in the Newly Projected Plan.

The plan is to have the teacher education institutions participating in this program serve as centers for school, public health and community leaders in the surrounding areas; to assist them in surveying and evaluating

their own pre-service education programs, and to encourage them to make necessary changes to meet apparent needs; and make all the resources of the college available to local areas, in order to provide the necessary leadership and consultant services for local schools, public health departments, and community groups.

#### *A Suggested Outline and Description of the Proposed Program*

It is being suggested that the colleges serve as a nucleus for the newly proposed program, and that they assume the necessary leadership for initiating this program in their respective areas. It is anticipated that the person selected at each college will spend at least half of his time working with local school and health departments and lay committees setting up demonstration programs in the schools and communities. These will provide practical functional experiences for the teachers and school administrators in both their pre-service and in-service education. These centers should also provide a means for cooperative planning and pooling of community resources for improved school and community health programs. These areas will also serve as observation centers for the college, local school, public health departments, and communities in the surrounding territories. Techniques and methods for accomplishing this objective, a total school and community health program should be tested here, evaluated and the results made available to all staff members of the college who are concerned; to local school administrators, and teachers, as well as to representatives of local public health departments.

#### *Some of the Outcomes that the State Would Hope to Achieve*

1. That improved pre-service training programs for all prospective teachers will be developed.
2. That colleges will, through this demonstration, see and accept their responsibility for providing in-service training opportunities in health education for teachers and school administrators.
3. That the continued need for the resources of the colleges be made available to local school and public health departments and to communities will be demonstrated.
4. That, through this experimental process, new procedures will be developed in methods and techniques in health education for all teachers and a continuous program of evaluating the effectiveness of these methods and techniques will be established.
5. That through these educational methods and that through effective coordination of school and community health resources, school and community health education programs will be improved.

#### *Conclusion*

The Project will serve as a laboratory for the development of policies, methods, materials, and techniques in health education, which will be applicable throughout the State.

Through the continued cooperation of the State Departments of Public Health and Education and with the assistance of other public and private agencies, the extended Health Education Project in the State of California should, with the persistent use of the education process, prove to be one



means of spearheading a program of improved school and community health education programs and the continued development of adequate local health services.

<sup>1</sup>Reorganization of Community Services—issued from the Office of THE WOMAN'S FOUNDATION, 10 East Fortieth St., New York.

<sup>2</sup>Suggested School Health Policies—1946—Health Education Council, New York and Minneapolis.

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## LESSONS FROM AN ARMY MENTAL HYGIENE CONSULTATION SERVICE APPLICABLE TO EDUCATION

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World War Number II brought out and speeded up invention, science, and production. In practically every field of production, engineering, and social endeavor the achievements staggered the imagination. The American people responded and the length of the war was brought nearer its close by those efforts. There was great expenditure of energy on the home, as well as on the combat front. Some of us soon realized as we did our daily increment of duty, that the home front, in spite of man-power losses and shortages, was doing a Herculean task. Many of us in the military service in specialized fields soon appreciated that preparation for this war had gone on since World War I. Some of us who had been in World War I, and now were in World War II realized promptly that the nation had made strides since those days of training as soldiers in 1916-'18. We soon realized that something had been added, that the nation as a whole presented a different picture in 1942 than in 1916. To the teachers and educators of the nation must go the credit for one of those great changes, for the men who came to the training camps presented a different educational profile. Let us look at this picture and entitle it "Comparative Educational Level of Selectees in World Wars I and II."<sup>1</sup> In the army of World War II, there were 14 per cent of the men of college level or graduates, in World War I, 5 per cent; in World War II, 25 per cent were high school graduates, as to 4 per cent in World War I. There were 28 per cent high school non-graduates in World War II, 11 per cent in World War I; 35 per cent grade school

selectees in World War II, as against 80 per cent in World War I. The soldier of World War II therefore was not educationally the same as the "1916-18 model."

In spite of this more favorable picture, the War Department demands were such that the Selective Service Office was instructed to reduce standards for selection and there consequently was set up in various training camps the Special Training Units. Now there were received at training centers, individuals who could not speak English, who, although they could speak the language, could not read or write, and those who could speak, could read and write, but only on a level below the fourth grade. Many times this meant that the soldier could write his name but could read or write nothing else. A program of elementary education was organized and set up, the objective being to bring up the educational level of these men to the fourth grade in first, 10, then 12, then 16 weeks. Now, imagine if you will, the young illiterate adult, inducted from the bayous of Louisiana. He spoke a type of special colloquial French, but no English. He never before had been away from the parrish, had learned the French dialect, but could not read or write it. He found himself with a few others from his own parrish, now at Camp Roberts, or Atterbury, or Claiborne, he must learn English, he lives in a strange environment, he must follow a new routine. He becomes homesick, this is the time of the year when he, with his father and brothers, went crabbing, clamming, or fishing, nostalgia now possesses him. He day-dreams in the classroom, he is confused at drill, he is shown repeatedly how to make his bed, how to stand at attention, how to wear his clothing. The 16 weeks have flown by, he has an examination, he has failed. He is now referred to the Mental Hygiene Consultation Service and in due time after much appearing before this and that group of officers, he is told that because of his inaptness for military service, he is to be returned to home. For this G. I. confusion tends to cease, he has not profited by the Special Training Unit. Joe Whitehorse is a Navajo, he speaks English but cannot read or write except his name. Yes, he went to a school for the Indian at Arlington, but could not fit himself into the educational pattern. Selective Service has caught up with him, the reduction of requirements have made him an inductee, he arrives at Camp Roberts, Special Training Unit. It soon becomes apparent that Whitehorse does not understand English, although he speaks it. His platoon leader cannot find him at class or drill periods, he always is present at mess, sleeps only occasionally in his assigned place, is untidy. He is soon brought in by a guard who found him wandering about in an artillery impact area where an advanced artillery regiment was having night firing. Whitehorse is referred to the consultation service. While he has been in his unit for 15 weeks, he has been truant repeatedly, has done none of the required work. He writes his name and a simple sentence. His A. G. C. T. places him in Group V with a score of 58. Although twenty-two years of age, he always has been employed as a sheep herder and states he just cannot understand or fit himself into the special training program. His fellow Navajos say he is not friendly, that he does not talk their language, that he is sullen, and that he does not seem to be an average Navajo. He cannot be graduated. He finally is separated from the service because of inaptness.

John B. is a native Californian, he is 20 and he has worked at the Long

Beach Douglas Aircraft as tool room assistant. He becomes an inductee, because the educational achievement levels have been lowered. He was rated by his Selective Service Board as having border-line mental intelligence. He had received social promotion from grade school to junior high school and to high school. He arrives at the Special Training Unit, he completes the 16 weeks, is graduated and is then transferred to the Cooks and Bakers School. He now begins to fail miserably, complaint after complaint arrives because he cannot seem to grasp his instructions. There seems to be no ability to remember and he lacks the initiative to get help from his instructor. He is not offensive or sullen, he does appear unhappy and without friends. One of his company's non-commissioned officers states that he is a "non-verbal dullard." We receive word from his high school counselor that his reading tests placed him at a grade level of 5.1, that his I. Q. was 78, that he was inoffensive and, therefore, was tolerated in high school, but he actually made no academic progress. He finally was granted a work permit and left school at 16. It was necessary to separate John from the service because of his inaptness. He went back to Douglas Aircraft as an assistant in the tool room.

Many of the Special Training Unit graduates were sent upon graduation to the Station Complement Unit to perform manual labor. Some were made available for certain types of other manual work, thus relieving others whose educational levels were higher.

The Special Training Unit finally was abandoned. The occasional enthusiastic, highly motivated intelligent inductee, who had a low rating because of his lack of educational opportunity, did profit, did learn, and did make a good soldier. There is much that can be said pro and con about the S. T. U.'s educational program. It did accomplish in 10, 12, or 16 weeks what it usually takes the public schools four years to achieve. This is not said in a spirit of derision, but as an observed fact, by one who after 18 years in school work, saw the army attempt to take over the role of the school teacher and claim to produce a miracle.

Much has been said in the press, over the radio, and in literature, scientific and otherwise, about the health of the young manhood of the nation. In the military and, off and on, in medical circles, the finger has been pointed at education as the probable agency upon whom to place the blame. There is appearing now and then from the Surgeon General's office, data which compare physical and mental health, disciplinary problems and offenses against the military law, with the educational level of those falling into certain unhealthy categories. The picture of mental health is an interesting and vital one to all interested in education and human welfare. Major Appel of the Surgeon General's office, reports in the *American Journal of Psychiatry* for January 1946, that from January 1, 1942 to June 30, 1945, 1,750,000 selectees were rejected because of neuro-psychiatric disorders.<sup>6</sup> This is broken down to 12 per cent of all men examined, and 37 per cent of men rejected for all causes. If one checks further, one finds that rejections for mental deficiencies lead the list with 33 per cent, the psychoneuroses follow with 31 per cent, psychopathic personality with 21 per cent, other psychiatric and neurological diseases with 12 per cent, the epilepsies, 2 per cent, and the psychosis, 1 per cent. During the same period, there were

320,000 men discharged from the service with neuro-psychiatric medical discharges and another 137,000 men discharged as neuro-psychiatrics, but without medical discharge. The clinical picture presented looks like this:

#### MEDICAL DISCHARGES

Psycho-neurosis	224,000
Psychosis	48,000
Neurological	21,000
Epilepsy	14,000
Other Psychiatric	13,000
	<hr/>
	320,000

#### NON-MEDICAL

Mental Deficiency	
Psychopathic Personality	137,000
	<hr/>

TOTAL 457,000

This then suggests that nearly a half-million men passed through the Selective Service, the Induction Center, and the Training Center Screens before they proved themselves inadequate for the military service. The conviction that many of these could have been caught by the proper screening does not help. In the army as well as in school systems, promotions and advancements are given in spite of known facts, because policies have been adopted such as non-failure of pupils, as well as non-failure in Special Training Units, Infantry Training Center, Artillery Training Center, and other military organizations. In several instances, the writer knows of orders indicating that at least 90 or 96 per cent of the men firing this or that weapon shall qualify as "Marksman," or as "Expert Infantryman," or as "Cannoneer." It is hardly pertinent then for the one to point to the other as the cause of poor academic or military training.

There is now available data which shows that for some of the mental maladjustment there is an educational correlation. It shows that those soldiers who succumb to psycho-neurosis for instance, have lower educational achievement than the army as a whole. This data is to be found in the Mental Hygiene Quarterly of October, 1945, under the title, "Enlisted Men With Overseas Service Discharged from the Army Because of Psycho-neurosis: A Follow Up," by Norman G. Brill, Mildred C. Tate, and William C. Menninger,<sup>®</sup> all of the Surgeon General's office. We quote: "In the original study, it was found that the psycho-neurotic dischargees had a lower educational achievement than the army as a whole. Examinations of the data for the men who had overseas service indicates an even more impressive difference. In the latter group only 5.4 per cent had had education beyond high school, whereas 11.5 per cent in Group A and 15.9 per cent in the total army population had had some college work. For 48.9 per cent in the overseas sample, education had been limited to the elementary school. This compares unfavorably with the 43.4 per cent in Group A, and the 30.9 per cent in the total army. These differences cannot be accounted for on the basis of age alone." They summarize the educational data by stating, "It is possible that the individual with more education has a

better grasp of the issues at stake in the war and that, as a result, a better motivation, he is less apt to develop an incapacitating psycho-neurosis."

The consultation service was always in demand to give psychiatric examinations for the Judge Advocate's Office. On the result of psychiatric examination often hung the pivotal question of whether the soldier, the non-commissioned officer, or officer was to be tried by Court Martial. It soon became apparent that as we traced the childhood development, then the school careers, and frequently the work record, that the uniform had not changed the character of the soldier in question. Here again, the role of education played its part. Guttamacher and Stewart, making a psychiatric study of absence without leave compared those going A. W. O. L. with the trainee population at Fort Eustes as to their ratings on the Army General Classification Test and on their educational achievement. They found that 41 per cent of all Fort Eustes scored in groups I and II (110 and over). There was only 10 per cent A. W. O. L. in that group. In those who scored in Group III (90-109), about 27 per cent, there was a 20 per cent AWOLism. In Group IV (60-89) which constituted 27 per cent of the Fort Eustes trainees, 48 per cent went A. W. O. L. In the Group V, and the illiterates which constituted 5 per cent of the trainees, there was a 22 per cent of AWOLism. If we look at this from one of their other tabulations, we see that 36 per cent of those going A. W. O. L. from Fort Eustes had completed less than the 6th grade, 35 per cent had completed less than the 8th grade, 17 per cent had completed less than 9th or 10th grades, 10 per cent less than the 11th or 12th grades and those who had graduated from high school and over, 2 per cent. They conclude, among other things, "A high percentage of men who go A. W. O. L. in the army give a history of AWOLism while at school (marked truancy) and AWOLism at work (frequent quitting of jobs). The great majority failed to complete grammar school and most of them had difficulty in passing."

A study of the 500 delinquent soldiers by Schneider and La Grone points to the same factors, that is, the low educational achievement as a characteristic element in their personality make-up. They summarize, in part, "The school adjustment of most army delinquents was poor. More than one-half did not complete the 9th grade and approximately one-third were either truant or were disciplinary problems. The majority of army delinquents are below average intelligence."<sup>8</sup>

Morale in the army was thought to be highest in the best informed soldiers. To that end, special moving pictures were made such as "Prelude to War" and "Why We Fight."<sup>9</sup> The Special Service Division, Research Branch, Services of Supply made several studies as to the attitude of the soldier regarding the question of their realization of the toughness of the job ahead. They tested groups before and after showing of films. It is interesting for our purposes today to note that the percentage of soldiers who believed there was a tough job ahead was a definite corollary of their educational achievement. Of those who had a grade school education, only 26 per cent believed the job ahead was a tough one, while 45 per cent of the high school graduates and 71 per cent of college men had such ideas. When special films were shown these men, only 32 per cent of the grade school group believed the job ahead to be tough, 46 per cent of the high school graduates, and 65 per cent of the college men. The educational and morale factors then of

special films had little effect on raising the morale in those with the lower educational achievement because they could not profit from what they saw and heard. Dr. Spencer has so well stated to the writer that one brings something to the printed page as well as being able to get something from it. To paraphrase this truism in terms of soldier morale, the films did not bring much to the soldier of average grade school achievement for he brought no understanding of history, economics or sociology to it.

Another phase of the work of the Mental Hygiene Consultation Service was in relation to classification reassignment and placement. Often the soldier found himself in a unit for service or training where his own abilities were stymied or he thought they were. It was apparent to the psychiatrist that he either must reclassify the soldier or anticipate the likelihood of having a maladjusted soldier. At first not much progress was made, but as the program and the Technical Manuals became available, it was possible to place men into positions where they could do a real service and their civilian training used to advantage. Frequently men assigned for training to schools such as wire communications, would report that they just could not understand. A transfer to more basic than the technical assignment often was achieved without loss of man-power and without the psychological hazard of failure, thwarting and maladjustment. In this pertinent field the army has many valuable lessons to give to education. In the field of secondary education, we do a lot of talking about guidance, we do a lot of testing, but because of the hardened system of grades we cannot apply the common sense that the army used in training men for a specific or special job. A recent sixth grade reading survey of some 2,253 sixth graders indicated the range of reading as measured by the Iowa Silent Reading Test was from the maximum grade equivalent to grade placement at 16.3 to below 2.1. As a consequence, a teacher of 6th grade reading may have to teach pupils in the same class who have a reading ability from the 2nd grade through college. We have this same statistical achievement curve in mathematics and other educational disciplines. Why not break down the matter of grades, place subject matter on a basis of actual achievement, and thus remove one of the great stumbling blocks for the superior child as well as for the slow learner and a change of curriculum for the non-reader. If the army can make such an adjustment during a war emergency, education certainly can begin to think in terms of other measurement than grades.

It is not our contention that education is the cure-all for the ills of the world, because there is a goodly number of our own brothers and sisters and of our own children who just cannot take unto themselves the offerings of education. Our army experience brought out most conclusively that there are individual differences, that they are not just academic phrases but sound realities. That these individual differences develop their own patterns of behavior, have their own achievement levels and can under proper guidance, classification and placement become good citizens. However, too often the pattern in some develops at cross-currents with society and neither the school nor the army can divert the pattern into wholesome citizenship. Where education takes, there is less of poverty, of crime, mental disease, and maladjustment. It therefore behooves us as educators to provide a



proportional educational opportunity to all the members, young and adult, of our democratic society.<sup>①</sup>

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## READING IN A CORRECTIONAL INSTITUTION

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During the year that the California Vocational Institution has been in operation, studies made through the testing program of the Guidance Center reveal that approximately 4 per cent of the inmate population of this Institution fall into what is known as the illiterate class or what is comparable to the fourth grade or below in educational achievement. The Department of Corrections, of which this Institution is a unit, has taken as one of its objectives that all men falling into this group must complete at least the sixth grade before they are considered for parole. There are cases, however, where the rigid interpretation of this rule is relaxed because of the low mentality of some of the men who fall into this particular category. While the reading level of many may be low, their ages run from 17 to 21, and many of them have spent from one to three years in the service of our country.

I have had many inquiries as to the method of instruction used for this illiterate or special elementary group. I always reply that no one particular method is used but a combination of methods is employed to teach these young men to read. For some, the spelling method is used, as we have

found that this system is extremely helpful for the very backward reader. For others the phonetic method has proved most successful. While it is felt that this causes an over-analysis of words and may even cause a reading disability at higher levels as well as a reversal of words, yet for some individuals the phonetic method, which we like to call word study, may be the most successful. Although we realize that for most people it would be a waste of time to study isolated words that can be learned more rapidly later by some other method, the whole word method is used for those who need it for word recognition. Any individual having difficulty with comprehension can profit by the use of this technique. The story method, as well as the sentence method, is used with some students. By and large, however, the method upon which we concentrate is that of a thought-getting process. We endeavor to train the student to look ahead in order to see a concept, which we feel is far more important than just reading words. Through this concept a development of ideas is the inevitable result. Since the students at this Institution have in most cases a broad background of experience, it is not necessary to develop a concept background through such devices as pictures and excursions. Much activity comes through writing and discussion, as these two methods help to build vocabulary. It is our feeling that reading should be a thought-producing process. Little oral reading is encouraged, for it is felt that cases of stuttering and other speech difficulties are often the result of asking students to read or sound out words before the group. These difficulties are often the result of emotional disturbance. Every effort is made to avoid any method that limits the student later on in any of his reactions; therefore, a combination of methods is usually used.

It is believed that the library is one of the most important divisions of the Institution and that a well organized program of directed reading may do as much toward the rehabilitation of certain young men as training for some particular vocation. Every effort is made to make reading a pleasant, enjoyable activity in an enjoyable situation. A concerted effort is made to encourage the men to use the library. The regular formalized library situation is broken down in order that the maximum use may be made of this invaluable facility.

Among the men in the illiterate group, the two cases that follow will give an indication of the training in reading that is possible and the degree of success that can be obtained. One case is that of a Servian gypsy boy, 19 years old at the time of his incarceration, third in a family of nine children. His parents placed him with an uncle, who, the boy claims, worked him without compensation and taught him petty thievery. This boy had a previous record for stealing and incorrigibility, was paroled and returned as a parole violator, and then later returned to his uncle. The two previous institutions where he had been committed gave him an I. Q. rating of 68 and 83. He claims to have attended school in one of the cities of this country that is recognized for its outstanding school system and in two of the larger cities of California. This youth was assigned to the special elementary class soon after his arrival at the Institution. After four months of training, he reported to his instructor one morning that the previous evening he had, for the first time in his life, been able to read unaided the letter he had received. It gave him a great deal of satisfaction and pleasure. Several weeks later he

reported that the previous evening in the dormitory none of the other inmates in his section had been able to pronounce a certain word appearing in a newspaper article and that he was the only one who could sound out the word. The word was "Czechoslovakia". A short time ago the Youth Authority gave this boy the opportunity to be placed in a forestry camp for the remainder of the time preceding his parole. Only the inmates with an outstanding record are given this chance. When consulted relative to his desires, he requested that he be permitted to remain at the California Vocational Institution to continue his school work. At present he is doing work on the eighth grade level, since the boys here are given individual instruction and are permitted to progress as fast as they can actually master the work. It is anticipated that he will complete the eighth grade before he goes out on parole.

Another outstanding case is that of a Mexican youth who has no record of any formal schooling but who learned to speak some English and to read slightly in a training school. This boy was rated as having low average or inferior general intelligence. This fact, combined with his language handicap, was definitely a hindrance to school progress. The clinical psychologist stated that some education might be attempted but that the probability of success could not be given. This youth was assigned to the special elementary class on September 23, 1946. Since then, he has progressed through the various grades until now he is doing a fine piece of work in the sixth grade. His papers are neat and superior in every respect, and he seems to be enjoying himself and deriving an unusual amount of pleasure from his school work.

Because of the fact that in the elementary field reading is such a basic tool that it involves 90 to 95 per cent of all study activity, it is, therefore, imperative that this be the core around which the elementary school training revolves. Various studies reveal that at least 25 per cent of the elementary school failures are in reading, and that figure is for a normal group. It would seem reasonable to believe that in a prison population the percentage of failures is considerably higher. In order to challenge, the reading material must be commensurate with the ability and the maturity of the reader. Reading is not only a basic skill, a necessary tool, but it is an integral and an intrinsic part of education. One of the objectives of the special elementary class is to teach the inmates how to read and how to derive benefits from that which they read. Unless this is done, we will find that the following old Oxford motto will, indeed, be a reality in our training program:

"He who reads and reads  
And does not know what he knows  
Is like he who plows and plows  
And never sows."

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## AUDITO-VISUAL PERCEPTION AND READING SUCCESS

*Sara Stinchfield Hawk, Ph.D.*

*Scripps College, Claremont, California*

### *Author's Comment:*

These are studies of a remedial group of poor readers, and a matched group having no reading difficulty, together with a matched group of very superior children; in all three groups of I. Q.'s were well above average. This is the second of a series of articles the author is preparing, as a step in the analysis of perceptual factors involved in reading disabilities. Many articles have been written about the child of low-average or average ability, and remedial reading difficulties. This is an attempt to gain more information regarding the child of above average or of superior ability who is also a reading disability case.

Last year I reported before this conference upon a number of reading disability cases in the Polytechnic Elementary and Junior High School, Pasadena, and the findings that were revealed by the Stanford Binet Intelligence Test. This year with the employment of a full-time remedial reading instructor, a larger number of children in Grades III to IX inclusive were able to receive regular remedial instruction. It seemed to me that it was important to try to review the exact gains made by these pupils, educationally, not only in reading but in other subjects, and to find out the results of such objective tests as the telebinocular test and adiometer studies, as well as measures made by use of Stanford Achievement Tests, and various reading tests.

Since the school must maintain high standards, in general, as our children must be able to transfer to any school, east or west, without difficulty or demotion, we welcome any addition which will bring up the standards of stragglers and cure the remedial cases of reversals, mirror writing, etc. A group of twenty-three children, who were found to be "poor readers," "poor spellers," or extremely poor in both fields, was selected by the Remedial Reading instructor from lists submitted by the teachers. Special reading and spelling tests as well as educational tests were given by her before and after training. The work was undertaken with the consent and cooperation of the parents, else it was felt that little could be accomplished.

Aside from the Stanford Achievement Test, Revised form, the Monroe Reading Readiness Test, Metropolitan Tests, Monroe Diagnostic Reading, Durrell Oral and Silent Reading and Gray Oral and Silent Reading Tests, Buckingham-Ayres Spelling Tests, eyedness and handedness tests were given in different cases. The school nurse, Mrs. E. Sugden, trained in the use of the adiometer, gave hearing tests to the entire remedial reading group. The speaker gave the telebinocular tests to each of these children. The results of both were made available to the remedial reading teacher. This instructor, Miss Dorothy Upton, trained in New York, worked with Mrs. Orton, Durrell, Gates and A. Cordts, and had had wide experience in private schools and clinics dealing with reading disabilities.

The graphs which I shall show indicate that her work was more than justified. It was possible to compare the results of the Fall scores in various subjects with those made in the Spring of this year. Daily progress was often shown graphically by the children themselves—games, contests, projects promoting self-interest in reading gains were introduced. Considerable work was done with spelling, building the foundation of an understanding of the "why" of spelling, syllabification, long and short vowels, type words, etc., as Miss Upton firmly believes if a child can spell intelligently, he can read.

The interest and satisfaction aroused in the children themselves was not only gratifying but a surprise to both teachers and parents.

One of the cases was that of a boy with an I. Q. of 125, friendly, eager to learn, but with a curious blocking in reading and making low grades in academic subjects with the exception of arithmetic. This boy, as shown on Graph I, advanced in reading comprehension from Grade Placement of 4.6 in the Fall to 8.4 in the Spring; from Grade Placement of 6.4 in the Fall in reading vocabulary to Grade Placement of 8.1 in the Spring. In literature he had always lagged, yet now he shows an advance from Grade Placement 5.1 in the Fall to 9.3 in the Spring. His average total score advanced from Grade Placement 5.6 to 7.6 or two years, in about eight months of training. His gain in personal happiness and satisfaction was one of the immeasurable factors which was most important.

Before mentioning other instances, it may be well to review the nature of the group as a whole. It represented children from Grades III through IXth. The total number of remedial cases taken on was twenty-three, or seven per cent of the school population of 350 children. The distribution was as follows:\*

Grade III	13%	Grade VI	39%	Grade IX	26%
Grade IV	9%	Grade VII	9%		
		Grade VIII	4%		

It will be noted that the largest number was from Grade VI, and the next largest from Grade IX because these are two break-down levels deliberately chosen by Miss Upton. There were 19 boys and 4 girls, or a ratio of 4 boys to 1 girl.

Since six grades were represented in the remedial work, the averages do not show much, but they do show the central tendency of the group. More than a third of the total were from the sixth grade. The median chronological age for the group was 11 years, 9 months. The median educational age, however, dropped to 10 years, 11½ months. Yet these same children earned an average mental age of 12 years, 10 months on the Stanford Binet individual tests. The median I. Q. was 123. Yet in spite of this intelligence quotient, the reading disability had caused most of these children to place near the foot of the class in academic work on the fall educational tests. Out of classes containing from 35 to 40 children, in the two sections of each grade, these reading disability pupils ranked on an average 34½th place in the class or in the lowest quartile, in spite of good intelligence.

\*There were no children from fifth grade in our list, as the remedial teacher's time had been completely filled before any fifth grade pupils had been referred by their teachers.

Of the total number of twenty-three who began training, two dropped out because of lack of home cooperation. Of the total number of cases, we have selected eleven of these who carried through for the longest time, between Fall and Spring of this past school year for analysis as to results shown in Graph II. There was a striking difference in the progress made by these eleven children as compared with the two who dropped out.

Graph II shows the advance in educational age between the Fall of 1945 and the Spring of 1946 for the eleven children who had constant and continuous training throughout the year. The average advance was from Grade Placement of 5.8 in the Fall to 8.2 in the Spring. The range in the Fall was from Grade Placement 5.2 to 6.4. In the Spring it ranged from Grade Placement 7.6 to 9.0. The average gain was about  $2\frac{1}{2}$  years during the eight months.

Graphs III and IV show the gains made by two other pupils, in all subjects except elementary science, on the Stanford Achievement Tests, Fall and Spring.

Now, as to the visual tests given to the boy shown in Graph I, we found very poor fusion at distance; this boy was nearsighted and was poor on lateral imbalance test; he could adjust on distance material, but words often blurred at near-point (reading) distance. The instrument had to be adjusted beyond the normal limits for him to read the words clearly. Yet he was said to have no pathology, no visual defect, and to be entirely a problem in visual perception and recognition. The audimeter test was negative for pure tone. This boy's I. Q. was 125.

The boy represented in Graph III, also from Sixth Grade, failed on the fusion test on the telebinocular tests at distance and was poor on sharpness of image with both eyes, at distance range; he was good on near-point material on all of the cards. He could adjust for reading distance, but had poor accommodation for objects and words beyond reading distance. On word perception cards, Betts material, he made numerous errors at Grade Three level such as *quite* for *quiet*, and *pond* for *prod*. He was below sixth grade level on reading for rate and accuracy, in both Durrell Oral and Silent Reading Tests.

The girl shown in Graph IV was left-eyed; she showed poor eye coordination and blurred vision on sharpness of image cards at far-point but had no difficulty at reading distance. She made many errors on similar words, though, on the Betts cards, showing poor word recognition and slow auditory fusion on the sounding test for words. She could not get g-a-t-e, or g-r-a-y, or s-ou-th readily when the elements were separated in this way; she had a short memory for sentences and read at Grade 5 level on Durrell Oral Reading and Silent Reading Tests; her right eye did not seem to function readily.

**Summary:** out of the total number, only two showed reduction in auditory acuity on the audiometer tests. One showed a 30 decibel loss on high frequencies around 5792 in the right ear; while this should not make any difference at present, it needs to be watched as a possible sign of early nerve destruction, according to the ear specialist who acts in an advisory capacity for our school. One other boy showed a similar reduction on higher frequencies only, indicating a gap, or island of deafness, possibly. The rest

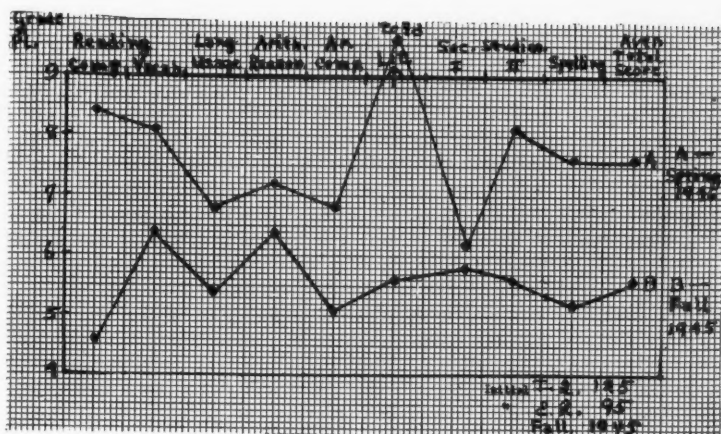


of the reading cases showed no peculiarities on the test for pure tone, on the audiometer, although in reading perception tests, with word lists, they did show an inability to recognize similar vowel and consonant sounds, oftentimes. Results of audiometer tests given in the army at Deshon Hospital, Pennsylvania, show similar peculiarities; the audiometer tests were often negative, though patients failed on sound recognition for consonants and vowels, when verbally presented. We cannot, therefore, depend upon the results of objective tests entirely, in the diagnosis of reading difficulty.

On the telebinocular tests, in the same way, in many of the cases where eye examinations had revealed no pathology, there were difficulties in fusion of sounds, in fusion of letters, in word recognition, visual perception differences between similarly spelled words, and on eye accommodation, sometimes at near-point and sometimes at distance. In two cases stuttering was closely linked, we believe, with the eye difficulty, one of these boys having reached the ninth grade without a recent eye examination, because he had been told some years ago that he did not need glasses. The telebinocular test revealed such surprising facts in regard to his vision that he was rushed to an eye specialist and it was found that he needed glasses very much.

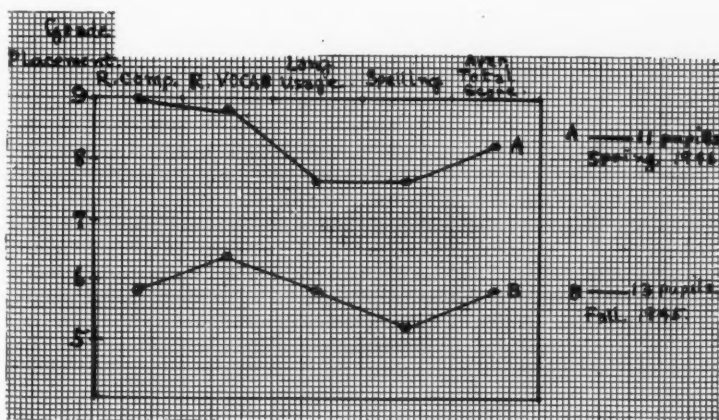
One remedial reading case referred to our college speech clinic this summer because of poor speech also, has been found to have a negative history on audiometer tests and eye examination, but she has very little ability to distinguish between words similarly written and sounds which resemble each other. These facts lead us to the conclusion that there are factors in reading perception on the auditory and the visual side which need constant study and rechecking, in addition to intensive remedial training. Also, results on a visio-verbal or an audito-verbal test often reveal difficulties which are not present in tests for pure tone, or for eye pathology. These cases seem to be the problem of the reading specialist, therefore.

The writer wishes to express her indebtedness to the following persons for access to their material and for permission to use data from the files of Polytechnic Elementary and Junior High School, Pasadena; Miss Katharine Lee, Principal, Miss Dorothy Upton, Director of Remedial training for the school, and Mrs. Esther Sugden, school nurse, for audiometer measurements. The telebinocular tests, Stanford-Binets, and educational achievement tests were given by the writer.



Graph I Case I

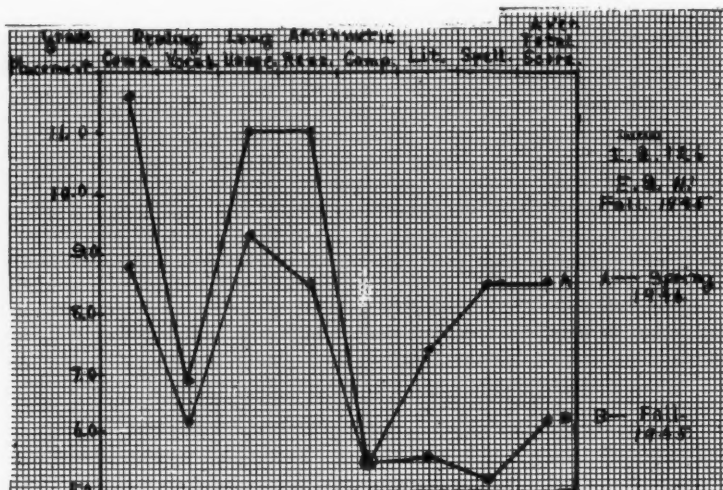
Showing advances in grade placement of pupil 1, following remedial reading training over a period of eight months. Stanford Achievement Test.



Graph II

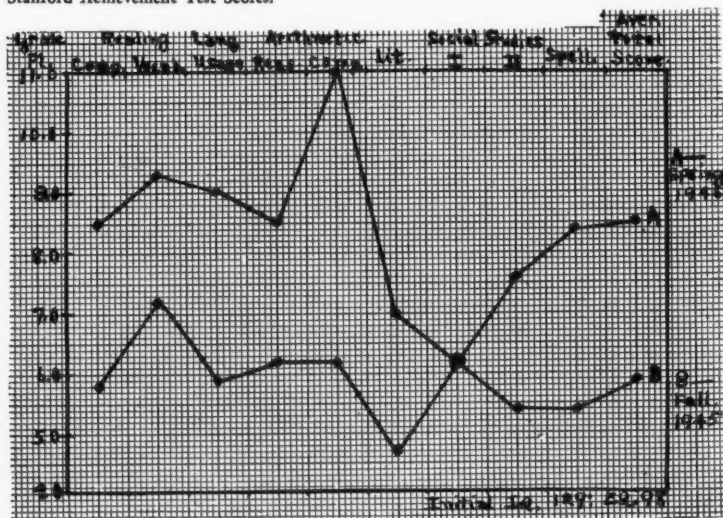
Results of Stanford Achievement Tests.

Showing advance made by 11 pupils who persisted throughout eight month training period. Line A represents the final improvement. Line B represents the same pupils, plus two who dropped out soon after beginning course, and whose graph remained practically the same at the end of eight months.



Graph III Case II

Showing advancement in grade placement of pupil II, following remedial training. Stanford Achievement Test Scores.



Graph IV Case III

Showing advancement in grade placement of pupil III following remedial training. Stanford Achievement Tests.

## Division III

### Reading Literature

*"The modern schools of psychology and pedagogy have tended, I think, to sterilize the whole experience of reading. There seems to be a serious question as to whether childhood reading should be for pleasure or by way of therapy. Here's one vote for sheer pleasure—the sort of delight in reading which sends a child to bed with a light to read by, and wakes him hours too early to continue reading. And for that sort of reading, parents might well profit by their own example in buying clothes for a growing child.*

*"Get him something a little too large. He'll grow into it."*

Russell Maloney

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## READING LITERATURE

### *Introduction*

By all odds the process of reading is most commonly associated with the reading of literature. In this conference and through this yearbook series we have tried consistently to expand that association and with some success. However, we have not and do not decry book reading.

By permission we have re-printed from the New York Times Book Review a stimulating statement by Russell Maloney concerning Childhood and the Printed Page. By all means read it!

Story telling is perhaps man's oldest way of teaching. Mrs. Smith gives some excellent observations on Story Telling and Methods of Instruction.

Did you ever buy a book for a friend? Think how much more difficult it would be to select many books for many adults. Dr. Pulling presents a discussion of reading where the problem to be read is young adults, and the answer is *books*.

Literature includes music. Learning to read music and not merely to read musical notation is proposed for boys and girls in Mr. Landon's article. What a wealth of things to read! Truly reading maketh a full man.



## CHILDHOOD AND THE PRINTED PAGE\*

*Russell Maloney*

This is written by the father of a small girl who is, happily, still illiterate. The day is coming, however, when the printed word will worm its way into her life. The uncomplicated and efficient relationship which she has managed to establish between herself and such external phenomena as surround her will be disrupted by polar words. Words will become her cues to laugh, to cry, to buy more consumer goods than she needs, and to vote for the wrong party. Poised now between ignorance and resignation, in the mercifully brief period when a parent has just become aware of the reading problem and still thinks he can control it, her father has been looking over the children's-book situation.

This is, to be utterly frank, a situation which can hardly be looked over by any one man. Booksellers who can gauge their buying public pretty well in most respects confess that they are completely in the dark when it comes to juvenile literature. Some of them are bitter. The books are unorthodox in shape, size, and texture, and require a disproportionate amount of space for their display. Many are so thin that, stood on a shelf, they become invisible, like an edge-on razor blade. Some are too tall for any shelf, and others—cloth books, pop-ups, cut-outs, fold-ups, and such-like *outré* formats—have to be laid away in drawers. Physically, the outlook for the nursery library is confused. The booksellers subscribe to the truism that children's books are written for adults, and add that in most cases the purchaser seems to be only remotely connected with the ultimate consumer; he, or more often she, is a distant relative, or a casual friend of the parents. The child's bookshelf, in the end, is a by-product of a series of social gestures.

The kind of grown-up who thinks of a child simply as a smaller grown-up with fewer social graces and no money in the bank will inevitably be attracted to the worthy book, the one which hopefully appeals to the child on the level of grown-up esthetics. If there be somewhere a child with a pretty taste in typography, one who likewise can appreciate the merits of a good water-color or pen-and-ink drawing, there are plenty of books for him, veritable treasures for his library cabinet. Tiny lovers of good prose, prose with the most impeccable social significance, are invited to sample Mr. E. B. White's "Stuart Little," the adventures of a mouse which has many of the attributes of a New Yorker editor; minuscule misogynists will revel in Mr. James Thurber's slightly hung-over fairy tale, "The White Deer." These are merely distinguished examples chosen from a crowded field.

Another school of juvenile literature is distinguished by the sober, factual, diagrammatic quality of a Fortune article. The manufacture of bread, what kind of work daddies do, the process of adopting an infant, the routine of the firehouse—an infinite number of such down-to-earth topics seem to have been explored by fully competent reporters. God and the various ways of worshiping Him have not been neglected, nor have the radio industry, the theatre, astronomy, and hospital routine (this last for the benefit of small tonsillectomy patients). In rebellion against this

\*Reprinted from The New York Times Book Review, November 10, 1946, by permission of the publishers.

literalism is another school of writers who exploit the pathetic fallacy to its fullest, giving thought and speech to animals, plants, and even machines. A child who is given books representing both schools stands a pretty good chance of interesting the psychiatrist later in life.

Another source of childhood traumas, of course, is the classic fairy tale, with its moonlight witches, gouging-out of eyes, wicked step-parents (cf. the diplomatic books written to assure adopted children how much they were wanted), burnings, hangings, drownings, all the arbitrary evil, pointless suffering and gruesome revenge of a savage past. Beware of the classic fairy tale—or don't beware of it, if you choose to throw in your lot with the child psychologists who claim that the blood and tears are not real to the child, and that to the extent that the stories do seem real they merely allow his accumulated hostility to trickle harmlessly down the fictional drain.

Children's books these days—as always, probably—are in a parlous state. Between the child and the book he might enjoy and profit by stands a brace of parents, relatives, librarians, psychologists and progressive-school teachers. Anything that trickles through this bottleneck is no doubt gratefully received, simply because of the shortage. One reason that the child turns, always and inevitably and defiantly, to the radio thriller and the comic strip is that both are available. Also, it might be noted, both radio and the comic strip are “too old for” the average child listener, who cannot, on the basis of his own experience, be quite sure why Benny the Rat has to be rubbed out and his body sunk in a block of cement in the East River. And note that the child does not ask for explanations. One of the great traditional values of good literature is its mysterious quality, the feeling that there is something beyond the story or the poem, something not understood. A child immersing himself in the grown-up world for the first time can have this feeling about a bad radio serial or a comic strip.

The question of a child's age in relation to the books he reads is a delicate one. A conscientious bookseller will agonize for fifteen or twenty minutes, helping some mental cripple select a book “for a 10-year-old boy,” for instance. Is he a bookish little boy, or non-bookish? Are his interests in reading romantic or technical? In no time at all, it becomes apparent that the task is as hard as, or harder than, selecting a book to give to a grown-up. Harder, because a grown-up will buy a best-seller because it is a best-seller, while the child has not yet sunk so low as to read a book because a lot of other children are reading it. The cynical bookseller will sell the customer a book plainly marked “for boys from 10 to 12” and let it go at that; and the conscientious bookseller soon becomes a cynic, out of the instinct for self-preservation.

The classic experiment in child nutrition allowed a group of children, observed over a long period of time, to select their own diet out of a variety of foods offered them. If they wanted to eat nothing but desserts for whole days at a time, they were allowed to. The conclusion was that a normal, healthy child would, if left alone, eat a series of more or less unbalanced meals which would, nevertheless, represent in the long run the essentials of a normal diet. It remains for the same experiment to be conducted with the child's reading. In letting him read what he wanted to there would at least be no danger of setting up a mental block against the whole idea of reading; he would continue to be a reader, even if a reader of bad books. And likely

as not his taste would level out; after the comic books and the half-understood gulps of grown-up reading and the magazine stories, as well as the school texts and the carefully selected library books and the indiscriminate gift books, some sort of pattern would impose itself and the child would begin to correlate its reading and make progress from one book to a better one.

The children's book has a definite place in this sort of program. It represents the easy conquest that is so necessary to the beginner, and later it represents security. The simple story, told or read over and over again, is a charm against the hostile outside world, or against the inner world that can be to some children equally hostile; the child whose family life is unsatisfactory, will read a book like "Little Men" just to participate in the Baer family's daily life.

The juvenile series, about the endless adventures of the same characters, come to take the place of real friends and real adventures that may be lacking.

The child's book—the book written for the child—represents security. In the child whose soul is worth saving, however, it will be the grown-up book that represents exploration, discovery and progress. The children's classics that we hand down from generation to generation—Gulliver and Crusoe and Tom Sawyer and all the rest—were not written for children. For all the careful expurgation and nursery formats that now surround them, is it the unmistakable stamp of adult thought that makes them precious to children.

The modern schools of psychology and pedagogy have tended, I think, to sterilize the whole experience of reading. There seems to be a serious question as to whether childhood reading should be for pleasure or by way of therapy. Here's one vote for sheer pleasure—the sort of delight in reading which sends a child to bed with a light to read by, and wakes him hours too early to continue reading. And for that sort of reading, parents might well profit by their own example in buying clothes for a growing child.

Get him something a little too large. He'll grow into it.

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## STORY TELLING AND METHODS OF INSTRUCTION

*Mrs. Louise H. Smith, Teacher  
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Simplicity should be the keynote of the good story for small children but the language should adhere to the best literary form. The plot should be uninvolved with plenty of action because action, motion, and thought are the three great divisions of life in the order named. Hence stories for small

children must express action and emotion. A little child acts and feels but does very little abstract thinking. His stories should be concise and dramatic with word picture quality but without wordy passages of description.

The main basis of selection of stories should be the child himself, not his age but the stage of his development. We who work with small children know that no two children develop at the same rate of progress. Children are fascinated by the sounds of words and for that reason it is very important that their first literature be given orally. This love of sound and sense of rhythm make the Finger Plays and Mother Goose Rhymes the logical beginning of literature. The first step is the Finger Play and it is the first kinesthetic approach to language development. Froebel says, "What a child imitates, he begins to understand." In other words, let him reflect in his play the varied aspects of life and his thought will begin to grapple with their significance. In most times and in most nations, the Finger Plays have been a delight to childhood. Countless babies have laughed and crowed over Pat-a-cake, while children of whatever age never fail to find amusement in playing "Here's the Church and here's the steeple" and scores of others as well known.

From Finger Plays, the child graduates to the Nursery Rhymes, some spoken, others sung and dramatized. The Nursery Rhyme reflects the world of natural things of quick healthy emotion and of the joy of living. The child is entertained with pageantry and romantic adventure to his delight.

As the child grows, the Nursery Rhymes give place to the animal stories, such as "The Three Pigs," "The Three Bears," "The Old Woman and the Pig," "Brer Rabbit," and many others. They are full of action and something is happening all the time. There are images that are simple without being hum-drum. The characters have experiences that the child may have and they live in familiar surroundings, as a rule. They live in houses, they use beds and chairs and so on just as children do.

Fairy Tales present to the older Primary child a love of beauty, a sense of the mysterious and the supernatural and give him a great deal of satisfaction. Great Fairy Tales usually embody truths that primitive man has discovered himself, about nature and about God and the child is in close kinship with primitive man. Some educators condemn the Fairy Tale because of the cruelty contained in so many but the child does not feel, nor does he judge from the adult point of view.

One should not undertake too many stories a year and these should be chosen with infinite care. Stories can be repeated many times because children delight in hearing a story over and over. Each time a story is told the meaning underlying the simple story comes to the child without any explanation on the part of the adult.

In story telling, one has to be both speaker and listener, one has to have the ability to understand and to transmit this understanding and last, but not least, to be sympathetic toward the story. Therefore, careful preparation is almost as important as the selection of a story. The storyteller must know the story and live with it. He must analyze it and study the structure of it; the beginning, the plot, the climax and the end.

The beginning, where every word that does not help hinders. The only way to begin is to begin. A story opening not only points forward to action

but actually begins the action, the introduction of the main characters, the suggestion of a setting of a mood.

The plot should be of a simple sort. It is difficult for small children to keep in mind the different threads of the complicated plot. Many details and long explanations should be skipped. A child would rather have repetition than too many details. One should not take for granted that children are acquainted with certain words upon which turns some important point in a story and all explanations should be made before. Questions also should not be asked during the story, as children do not always give the kind of answers expected of them. As a rule, the well-prepared story will answer most necessary questions.

The climax is the high point in the action of the story and is reached by an advance or an intentional recession of scenes and usually in children's stories, the climax is the end of the story. The swiftest ending of all fictional forms are those of children's stories and the same applies here as in the beginning of stories, when you are through, stop. An anti-climax is a painful let-down of interest.

There should be an interest in and a grasp of stories much listening to and much telling of stories in the pre-reading group. Reading Readiness in the Kindergarten and lower Primary Grades depends in part on the Art of Story Telling. Experience indicates that in schools where story telling and dramatization of stories are practiced, the pupils have a better start in reading, through attentiveness and their general power of expression than the pupils denied those benefits. Stories tend to broaden and interpret the child's own experiences and introduce him to a world of interesting facts.

From listening to an adult tell a story it is but a short step for the child to tell or retell a story of his own. These may be an account of an actual happening or sometimes an imaginative tale based on an occurrence or possibly a number of stories strung together. If a child is told carefully, well selected, well prepared stories he will usually react with some form of creative activity. Many children will need help in beginning creative Story Telling. Small pictures, pasted on colored construction paper, folded like a book, will give the child the needed inspiration. These stimulators "prime the pump" so to speak.

To check how well a child listens and to train him in keeping a series of ideas in mind, pictures of all the prime favorites, cut out and each one pasted on a separate square of card or tag board and shuffled together like a deck of cards can be placed where the child has easy access to them. He can take them and arrange the pictures in the sequence of the main events of the stories.

All these aid the child to increase his vocabulary, giving him added power of self-expression, to raise the quality of his oral English, to increase his ability to listen attentively, to strengthen his ability, to sense sequence of ideas and to enrich his imagination. All of which are important factors in Reading Readiness.

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## BOOK SELECTION FOR THE YOUNG ADULT

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It is with great temerity that I approach you on your own ground with a discussion of book selection for the young adult. For the Senior High School and Junior College teacher whose work and pleasure it is to devise the curriculum for the older adolescent, to direct his studies, to plan his reading, book selection is, I am sure, a routine experience. Teacher and librarian approach the task of book selection for this age group with the same ends in view—the development of well-integrated, well-rounded, intelligent men and women, possessed of maximum means and adequate methods for independent thinking, effective human relationships, and wholesome enjoyment of life.

You will agree with me that the selection of books for the young adult has a peculiar fascination; it holds a challenge and a problem not found in the selection of reading materials for either the younger or the older reader. Part of this fascination, this challenge, and indeed, this problem, lies in the nature of the young adult himself.

Unlike children and adults, the young adult is, as it were, "on the wing." The long, slow days of childhood are no longer his; he has not yet reached the satisfying state of "arrival." He is ever straining to "become." Physically, intellectually, emotionally, the young adult is passing through a period of change that is unlike any other transitional period of life. Swiftly in some respects, slowly in others, he is changing from a child to an adult. Consequently he is neither "young" nor "adult" but partakes of the qualities of both.

In his development symmetry comes slowly. Physical growth and mental and emotional status are frequently at odds with each other. As a result, strains and stresses are evident. In attempting to cope with an unfamiliar body, with new and surprising responsibilities and urges, the young adult runs in rapid sequence the gamut of emotion and reaction. In turn he is restless, bold, sensitive. He assumes an attitude of complacency, self-assurance, and responsibility, only to become at a moment's notice the shirker, the timid, the shy. The bold defender becomes the teaser. Any one of his outer façades may be but a cloak put on to conceal some secret reaction; it may be openly donned the following day to reflect a sincere but new-found approach to one of life's problems. Consciously or unconsciously, the young adult is seeking, searching; he is striving to become wholly an adult.

The nature of the world in which the young adult lives today is also a determining factor in his development. Under modern conditions of living, the time is brief for adjustments, for growth and orientation, for the achievement of wise and sure reactions. In former days the problems confronting the young person were neither so many nor so apparent as they are today. The youth passed with relative ease into the life led by his parents, because he continued to live in the same environment. Today his horizons are of necessity expanded—a world, not just a home or a family, must be met.



Problems have increased in number and complexity. The young adult is pushed rapidly toward his place in the adult world; his adjustments must be made without undue hesitation.

During the period of transition there is no typical young adult. He is as varied, as changeful, as his moods are countless; he is as individualistic as he and his fellows are numerous. Within both the individual and the group there are variations and inconsistencies as to aptitudes, attitudes, interests, and needs. The young adult changes from day to day, and no young adult is the same as another.

As he changes, his reading needs change. The individual as he is at the moment in his search for higher ground is the guiding factor in the selection of books for this age group. Books cannot be chosen for young adults *en masse*; they must be selected for *the* young adult. A collection of books designed for the reading of young adults must necessarily be broad and encompassing in appeal so that widely varied and ever changing needs may be served.

In order that the collection may serve individual needs, case studies of each and every young adult to be served should be made—case studies that take into account the person he has lately been, the one he is now, and the one he is becoming. His background, his present status and living conditions, his opportunities, reveal the person he is. Personal conversation, interview, observation, and social contact bear rich returns in promoting an understanding of the young adult. All possible avenues of approach to his inner being should be sought and constantly explored.

Because of the magnitude of the task, no one person alone can make the study. It is essential that consultation be frequent with librarian, teacher, parent, social worker, counselor; indeed, with all who have knowledge of him. Findings from all facets of the young adult's life must be correlated so that inter-relationships, influences, causes, and effects may be understood and his reading needs determined. Records kept for purposes wholly unrelated to book selection will reveal to the wise examiner the need and the place for a specific book. Records of past reading point the way for reading today. Assessment and reassessment must be made if one is to choose for the young adult the right book at the time it is needed. In this period of rapid change, the opportunity to serve a vital need may come but once.

The selector of books for the young adult must be not only an omnivorous reader herself, but an astute student of sociology and applied psychology. To her formal instruction in the art of understanding human nature and of helping human beings along the way, may be added the insight gained through the reading of imaginative literature. Novels about the young adult will add immeasurably to her understanding. How much Elizabeth Bowen's *The Death of the Heart*, Walter Van Tilburg's *City of Trembling Leaves*, Felicia Morrow's *Demon Daughter*, reveal of the propulsive elements in the young adult himself! Problems which beset the young adult are brought out with clarity and understanding in such books as Madeline L'Engle's *Small Rain*, William Maxwell's *The Folded Leaf*, and Booth Tarkington's *Alice Adams*.

The selector of books for the young adult must know the world of print. She must be able to recognize, and to present with enthusiasm, the book, whether new or old, classic or comic, that holds the material pertinent

to the need, be it permanent or temporary, of the developing young adult. She must be able to see reading relationships, not only from book to book, but from person to book and back again; from the newly emerged personality to a book that is pertinent to a newly discovered need. She must know that what is right for today may be wrong for tomorrow; what is right for one young adult may be wrong for another.

For the reading needs of the young adult are as varied, as individualistic, as he is himself. His reading, according to his various stages of development, may be drawn from childhood's realm of books, from books on his own age group, from books designed for adults. The young adult may savor books from all three fields at the same time because his development varies. He is part child, part youth, part man. There is—there can be—no body of literature that may be designated as "books for young adults" only. Selection of books for the young adult must be made from the world of books.

Nor should the young adult be expected to select his own reading materials from the vast reservoir of the world's literature. Living as he does amid confusing changes and pressing demands, the young adult has neither the realization of his personal needs nor the knowledge of particular books that will satisfy them. He is aware only of needs. Uninformed, undirected, his choice of reading material too often leads to discouragement and reading frustration, to the pseudo-satisfactions offered by stimulating distortions, or simply to waste of time.

For reading at this age becomes increasingly a formative factor. It takes on new significance as it ceases to be an exercise for the mastery of a procedure and becomes instead, an experience. If the reading experiences are pertinent, enlightening, and true to the basic principles of life itself, the creative potential is high; if those experiences are narrow, distorted, or false, development is handicapped, thwarted, or forced to recede. Reading, like all experience for this age, has power to make or to mar.

Much creative experience must be packed into the six years from fifteen to twenty-one. The harmful book must not be read; the harmless book carries no recommendation. The time is short; all reading should have constructive merit if it is to assist the young adult in his attainment of truly adult status.

The basic need of the young adult is to prepare for the adult world he seeks to enter. One by one he opens the gates to that world—some gates earlier than others because he becomes adult in some respects earlier than in others. He realizes fully that, as one young member of New York Public Library's Nathan Straus Branch wrote, "tomorrow will be only as bright and full as you have prepared it today." His needs are to know, to understand, the adult world; his needs are also to make the personal adjustments, personal developments, that will enable him to find and to maintain his place among other adults. His reading experiences should be such as to advance him toward his goal.

Specific examples in terms of the personality of the young adult may be cited:

Living in the adult world implies personal independence—independence to live, to work, to think, to feel. This status the young adult seeks to achieve. The urge to work out his own destiny, free from the dictates of family, convention, and the voice of authority, is real to the young adult.

Real, too, is the emotional conflict aroused by this surprisingly sudden phenomena. Conflict with family and friends is inevitable as he stumblingly or assertively seeks to establish his freedom, to transfer his affections, to demonstrate the need for new standards and mores to supplant the seemingly outmoded ones of an earlier generation. The young adult, confused, impelled by forces outside his own understanding, too frequently is faced with misunderstanding, with a lack of guidance and aid, that wisely selected books, pointedly related to needs, may well counterbalance. Books may be read that reveal the universality of his predicament, the naturalness of his urges, and their place in the process of growing into an adult world. How much of this common denominator is to be found in such books as Thomas Wolfe's *Look Homeward, Angel*, the Whiteoak series by Mazo de la Roche, in Dorothy Canfield Fisher's *The Bent Twig*, Maureen Daly's *Seventeenth Summer*, or Sidney Howard's play, *The Silver Cord*! More recently such books as *Our Son Pablo* by Alvin and Darley Gordon, and Cronin's *The Green Years* carry the message.

To these books may be added those which explain the problems and pitfalls encountered by other young adults in their efforts to achieve independence—books that give perspective, that promote an intelligent attitude toward the problems inherent in the process. Ruth Suckow's *The Odyssey of a Nice Girl*, Marjorie Hill Allee's *The Great Tradition*, and Louise Baker's *Out on a Limb* are examples of note.

Part and parcel of the young adult's urge for independence is his urge to become economically self-sustaining and occupationally self-fulfilling. Occupational orientation is one of the most easily served needs of the young adult for its outlines are clear and precise and books on the subject are many. Reading materials on occupations may be drawn from all fields of human endeavor and are found in various forms—biography, travel, fiction, and factual presentations. Books on many different careers, informational, exact, detailed, and up to the minute in accuracy, and books which enable him to evaluate his own assets and liabilities, should supplement books on the personal side of career building. He should have access to books that open vistas of possible endeavors, that stimulate the imagination, that lure to higher achievements; and books that present hardships overcome by others in their search for fulfillment and economic orientation. The fields represented should be broad and encompassing so that exploration may be invited and unrestricted. Recent titles include such books as David Ewen's *Haydn*, Martha Hardy's *Tatoosb*, Adele de Leeuw's *With a High Heart*, John Joseph Floherty's *Men Against Crime*, and Gladys Malvern's *Gloria, Ballet Dancer*.

Personal development is soon found to be a necessary accompaniment of personal independence. The young adult is early cognizant of this need and consciously prepares for it. As a young adolescent he sought identification with his age mates and he strove to make himself acceptable, an integral part of his group. As a young adult he seeks instead to break from the group pattern and to develop a personality, an individuality, of his own. There is a new awareness of self as a person, one whose problems are individual rather than common to all. As Samuel Johnson once said, "There lurks in every human heart a desire for distinction, which inclines every man first to hope, then to believe, that nature has given him something peculiar to himself." The search for adult status is the search for that intangible

"something" which will set him apart from all others—the search for an understanding of self.

The young adult adds to his earlier interest in such books as Maureen Daly's *Smarter and Smoother*, Betty Betz' *Your Manners are Showing*, and Shiela Daly's *Personality Plus*, an interest in the meaning of life situations as a means to an understanding of self. He turns to a search for cause and effect in human relations; acceptance and adjustment follow their finding. Give him, then, books that reveal the wellsprings of human emotion; that show the deep-lying problems inherent in human relations and possible solutions to them; that explain the true values of life and the reasons for acceptance of them. Give him accounts of friendship, love, marriage, of getting along with people. Give him books that inspire in him courage, self-confidence, compassion; books that instill worthy ideals and principles and the impulse to act on convictions. Give him books that reveal the real meaning of life as reflected in thought and experience.

Biography, autobiography, fiction, poetry, drama, and essay are vehicles aptly expressive of humanity's deeper significance. The young adult will find insight and vicarious expression in such books as *Madame Curie*, by Eve Curie, Era Bell Thompson's *American Daughter*, Gwethelyn Graham's *Earth and High Heaven*, in the poetry of Edna St. Vincent Millay and the plays of Noel Coward. Books of nonfiction such as Harry Emerson Fosdick's *On Being Fit to Live With* and Henry Link's *The Rediscovery of Morals* have place in this collection as does also the lighter-veined *How to Win Friends and Influence People* by Dale Carnegie.

Besides informational books with emotional appeal the young adult needs clear-cut expositions of the factors involved in human relations. To aid in the development of critical thinking on controversial issues and in the building of attitudes based on fact, not on hearsay, factual presentations on such topics should be available. Problems of labor, race relations, international relations, family relations, indeed, all topics of note to adults should be explored by the young adult. To these should be added books of general informational content.

The task of the book selector, however, does not end with the selection of books in subject fields for purposes of personal development. The needs of the young adult for reading materials will be served only if titles chosen subserve his needs in matters of readability and his pleasures in format and style. A book must be read to be useful, and readability, format, and style are often first points of impact. As in content, the needs of the young adults in these features have infinite variations. Books of similar theme and interpretation must be graduated from easy to more difficult reading; format and style must be adapted to varying degrees of maturity.

Problems of race in relation to readability will serve as an illustration. Books on this subject may grade from such elementary studies as Florence Means' *The Moved Outers* through John Becker's *The Negro in American Life* and Spencer Logan's *A Negro's Faith in America*, one pictorial, the other narrative, both presentations of the negro's life and work with portrayal of the deep significance of his place in America. From these studies the young adult may be led through sociological studies of the concepts and attitudes that have resulted in race discrimination in America as found in such studies as Wallace Stegner's *One Nation* and Margaret Halsey's

*Color Blind*, and in such novels as Josephine Lawrence's *Let Us Consider One Another*, and, for the older young adult, Lillian Smith's *Strange Fruit*. Finally, comprehensive studies such as Sholam Asch's *East River* and Myrdal's study of the negro will appeal to the more mature members of the group.

But reading guidance for the young adult is more than a matter of building a collection of books generally useful to young adults. Recommendation for each title chosen is dependent upon the particular point that a particular young adult has reached on his way toward adulthood. To say that a book is *good* serves his need only partially. The selector of books for the young adult must answer the question, "*good* for what?"

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## MUSIC EXPERIENCES FOR BOYS AND GIRLS

Joseph W. Landon  
Supervisor of Music  
San Bernardino City Schools

"Since singing is so good a thing,  
I wish all men would learn to sing."

—William Byrd.

### SO YOU WANT TO KNOW MUSIC?

Music education in the public schools of America has been charged with the tremendous responsibility of providing young people with knowledges and appreciations so necessary for gaining the fullest measure of life both immediately, and later as adult citizens in the world in which they live. We can no longer be content with music experiences which teach children musical literacy but little else. If we are sincere in our desire that our students shall know music, then we must be prepared to offer them rich, varied, and meaningful experiences in music in the public schools.

Our contacts with music are increasing every day, as evidenced in music we hear by radio, with the motion picture, from phonograph records, in the restaurant, hotel or nightclub, on the stage, and in the school and home. No longer is our only contact with it limited to the parlor piano or the town band playing a summer concert in the park. Science has made possible the continuous playing of music for twenty-four hours a day in any home in America by the mere twist of the radio dial. Soon, countless frequency modulation sets and FM broadcast stations will make possible better reception

of music in the home, and television is about to come of age and make possible even further experiences for numerous citizens which they have never dreamed of before.

It is evident then that we can no longer expect that children will be prepared to know music of this day if their only contact is in the "singing lesson" of grandfather's day. They must be assured that the public schools will give them opportunities to experience and evaluate many phases of music which will give them the necessary background to make wise choices of musical fare as adults. This cannot be done by cramming a selection of Bach, Beethoven, and Brahms down the throats of our unsuspecting little charges, saying to them, "This is what you should know—now let's learn only the best in music!" It can be done, however, by an intelligent sequence of music activities, properly fitted to the individual's level of maturity, and beginning with present interests and guiding them to expansion.

This type of music education must not only be geared to the future, but must give each child some degree of immediate satisfaction in his present musical experience. Many crimes have been committed in the name of music education by asking children to labor over note reading in early elementary grades, attempting to justify it by saying that it is absolutely necessary to read music in order to sing in glee club or play in orchestra later on. Just what percentage of these children are expected to continued their education with formal music training? From experience in the San Bernardino City Schools, we find that only about 10 to 20 per cent of the total enrollment of our junior and senior high schools continue in elective music classes. Part of this is a natural mortality rate due to many factors, of course, and admittedly does not include every child who would like to or should continue music. The important point to remember is, however, that it is not necessary to be musically "literate" in order to understand and appreciate music. Note reading can be taught in small doses at appropriate levels in elementary school so that every individual may have at least a speaking acquaintance with the rudiments of music which may assist him in gaining further satisfaction from the singing experience. This singing experience, however, should be one of the chief avenues toward a fuller appreciation of music, while such skills as music reading are but one means of arriving at that end. Further, the student who pursues music as a major interest will be motivated toward further study in the rudiments and techniques of music which may be gathered from special classes, while not subjecting the rank and file to a sentence of musical drudgery in skills for which they will have little use.

### HOW TO TEACH CHILDREN TO KNOW MUSIC

What are some of the experiences which are important for children to have in order that they become better acquainted with music? I should say the most basic of these are singing, listening, feeling (rhythm), creating, dancing, playing, and talking or reading about music and musicians.

There seems to be quite general agreement that one of the most fundamental ways of satisfying a desire for participation in group activity, is through the medium of the singing voice. Little children usually respond to this experience with little if any prodding, and unless emotionally inhibited and even if they have had practically no music at home, in no time



at all they will be joining with the group in singing songs of nursery school, kindergarten, and elementary grades. As a matter of fact, it is at this first stage that they are gaining confidence—they want to sing and be a part of the fun which the group is sharing. Just as in most other early experiences of school days, natural desires for expression must be carefully guided into wise channels and the child given an opportunity for growth. The teacher must carefully nurture the child voice, helping children to evaluate and see wherein they may improve voices, tones, skills, and techniques helpful to gaining the utmost from this experience. Yet, the child must not be frustrated and told to "be quiet" if he is unable to match tones or if he is less successful than many children in his production of music. Participation desires are most important.

Listening is perhaps the second most basic experience for children in music. It is relatively unimportant unless the listening is done actively and purposefully. The child who learns to participate in the listening lesson will see beauty and meaning in music where to another child listening haphazardly this music is but a jumble of sound.

A feeling of rhythm is somewhat instinctive. There is rhythm in nature and in music. Bodily movements, such as our means of locomotion, swaying, etc., lend themselves quickly to a musical counterpart. It is not difficult to show little children how they may walk, skip, run, march, or clap to music. But our growth must not stop at that point. Folk games and dances are a natural outgrowth of this early rhythmic activity, and much can be gained from creative rhythms, dramatic play rhythms, and rhythm band orchestrations in leading children into a wholly varied and new experience in music.

Most children enjoy creating verses and jingles which they occasionally contrive to set to music, or rhythms which enhance the feeling of the Latin-American song for example. The field is practically unlimited—its bounds are not measured so much in child-like ideas as in the "know-how" of the teacher in knowing how to effectively guide and utilize them. One of the most worthwhile creative activities ever observed by the writer was in a sixth grade class where, at the suggestion of the pupils, a song was composed, harmonized in two parts, orchestrated for rhythm and melody instruments, and dramatized in such a fashion as to make an outstanding contribution to the current social studies unit. Nothing short of a command performance by an angelic choir would have been more meaningful in the young lives of the children who produced this music.

A mistaken conception held by some people is that only talented children may play musical instruments, hence the average child is denied an opportunity to participate in this phase of music. It is true that some talent is necessary to play the average orchestral instrument, but any child may have some degree of experience with tone bells, tuned water glasses, rhythm instruments, or autoharp for example. The child who discovers that he can play a simple rhythm to give the Latin flavor to "La Cucaracha," or who can accompany the class singing by playing a few chords on the autoharp, or who can pick out "Hot Cross Buns" or "London Bridge" on the tone bells has a thrill which comes no other way. He at last has "arrived," and is an important member of the musical group. Not strangely, from such an experience can come a deeper appreciation of the instrumental music which such a child now hears with different ears.

Modern books about music and musicians tell stories behind our great music which no longer develop feelings of mystery, nor do they portray impossible "long-hair" characters who create and play music. Music stories are told in a live, real manner making them seem a most natural and desirable experience for children.

Each of these areas are important for children to share if we would have them know music.

### OVERLOOK THE TALENTED CHILD?

What about little Johnnie or Susie, both talented children who love to sing and show unusual ability when allowed to play the autoharp and bells? Later, these same children show interest in learning to go beyond the immediate realm of activities in music offered in the classroom. They too are important, but because of their relative small number, will not occupy the attention of the teacher as do the masses of children who are not so gifted or interested.

We owe it to boys and girls to seek out such talent and interests and provide for them such instruction as may guide them to a fuller realization of the riches music has in store. Parents should be informed where such talent and interest are manifest, and suggestions made that will encourage the child to begin a study of some instrument. In many cases, this first stage may be taken care of by the school itself where there are people specially trained in music who may start these youngsters along the road in special music activities.

In some instances, it is wise to give music aptitude tests to older children in the elementary grades, which if used with intelligence provide indications of helpful guidance to these people.

It seems important to remember that even with these gifted or semi-talented children, most will never become musical geniuses. Moreover, with few exceptions, their training should not encourage the hope of a professional career, since for most, these new experiences in special music training will be merely new avenues toward a fuller participation in music than might otherwise be expected. The few exceptions should be made for those youngsters who show such signs of budding talent as to warrant study under music teachers who are trained in this field.

### WHERE DO WE GO FROM HERE?

Music education, like the society in which we live changes with the passing of time and the influence of the thinking and deeds of men. The underlying principles which have fostered its growth are relatively constant, but we must continually seek new approaches and applications in order that our contact with music be ever vital.

Just as the radio and sound motion picture brought to millions new contacts with music, so also will such things as frequency modulation, the magnetic wire recorder, and television. The unlimited uses which these and other scientific marvels offer in the field of music will be limited largely to the demands which the public makes upon them. Thus, if attitudes and appreciations for music begun in the public school influence as they should

the tastes of the adult public of the United States, a great demand will be created for frequency modulation broadcasts, tape-recorded programs, and televised shows which will provide us with a wealth of varied and discriminating experiences in music.

Children in the public schools today have rich opportunities to know and appreciate music. Many of these experiences were unknown in the school days of most adults, but have proven themselves of such value that a school without them would be like a three-legged table; slightly unbalanced.

We have seen that it is important to concentrate on the child as a whole individual, and to give him positive attitudes toward music as well as other phases of the curriculum, so that through knowledges and appreciations, the beauty of the world in which he lives may be more fully realized. It is our hope as teachers that some of these learning situations which bring about joys and satisfactions will also constantly challenge children and teachers to go further into the realm of music and to penetrate more deeply into its meanings as a force in the society of which we are a part.

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